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CONFIDENTIAL ITEMS

Clause 240(4) of the Local Government (General) Regulation 2005 requires Council to refer any business to be considered when the meeting is closed to the public in the Ordinary Business Paper prepared for the same meeting. Council will discuss the following items under the terms of the Local Government Act 1993 Section 10A(2), as follows:

ITEM 1 ELECTRICITY PROCUREMENT

(d) (i) commercial information of a confidential nature that would, if disclosed prejudice the commercial position of the person who supplied it

ITEM 2 ELECTRIC VEHICLE CHARGING GRANTS

(d) (i) commercial information of a confidential nature that would, if disclosed prejudice the commercial position of the person who supplied it

ANNEXURE ITEMS

ITEM 1 - APPLICATIONS FOR LEAVE OF ABSENCE

REPORT IN BRIEF

Reason For Report	To allow tendering of apologies for councillors not present.
Policy Implications	Nil
Budget Implications	Nil
IPR Linkage	4.5.1.g - Code of Meeting Practice adopted and implemented.
Annexures	Nil
File Number	\OFFICIAL RECORDS LIBRARY\GOVERNANCE\COUNCIL MEETINGS\COUNCIL - COUNCILLORS LEAVE OF ABSENCE - 1410189

RECOMMENDATION

THAT any apologies tendered be accepted and the necessary leave of absence be granted.

GENERAL MANAGER REPORT

A call for apologies is to be made.

ITEM 2 - DECLARATIONS OF INTEREST

REPORT IN BRIEF

Reason For Report	To allow an opportunity for councillors to declare an interest in any items to be determined at this meeting.
Policy Implications	Nil
Budget Implications	Nil
IPR Linkage	4.5.1.g - Code of Meeting Practice adopted and implemented.
Annexures	Nil
File Number	\OFFICIAL RECORDS LIBRARY\GOVERNANCE\COUNCIL MEETINGS\COUNCIL - COUNCILLORS AND STAFF DECLARATION OF INTEREST - 2021 - 1410190

RECOMMENDATION

THAT the Declarations of Interest be noted.

GENERAL MANAGER REPORT

A call for Declarations of Interest.

ITEM 3 - DECLARATIONS FOR POLITICAL DONATIONS

REPORT IN BRIEF

Reason For Report	To allow an opportunity for Councillors to declare any Political Donations received.
Policy Implications	Nil
Budget Implications	Nil
IPR Linkage	4.5.1.g - Code of Meeting Practice adopted and implemented.
Annexures	Nil
File Number	\OFFICIAL RECORDS LIBRARY\GOVERNANCE\COUNCIL MEETINGS\COUNCIL - COUNCILLORS DECLARATION OF POLITICAL DONATIONS - 1410191

RECOMMENDATION

THAT any political donations be noted.

GENERAL MANAGER'S REPORT

A call for declarations of any political donations.

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ANNEXURE ITEMS

ITEM 1 - DRAFT EMISSIONS REDUCTION PLAN

REPORT IN BRIEF

Reason For Report	To present draft Emissions Reduction Plan to Committee.
Policy Implications	Nil
Budget Implications	NIl
IPR Linkage	1.3.2.1b - Implement the adopted actions from Council's Emissions Reduction Plan (ERP).
Annexures	1. Emissions Reduction Plan v.3⇩
File Number	\OFFICIAL RECORDS LIBRARY\ENVIRONMENTAL MANAGEMENT\PLANNING\EMISSIONS REDUCTION PLAN - 1410882

DEPARTMENT LEADER - INNOVATION & TECHNOLOGY'S REPORT

With funding under the NSW Department of Planning and Environment's "Sustainable Councils and Communities Program" and the Central NSW Joint Organisation (CNSWJO), Council staff engaged the services of consultants 100% Renewables to develop an Emissions Reduction Plan.

Consultants 100% Renewables have completed a draft version of Council's Emissions Reduction Plan, which is attached to this report for review. Any feedback gathered will be collated and sent to 100% Renewables for consideration with the final report expected to be presented to Council at its workshop and meeting in August.

This will be the initial phase of council's approach to reducing its emissions and identifies current state and a very high-level appraisal of focus areas.

Next steps: Council will use this information to proceed towards an action-based plan/roadmap which will have to be supported through consultancy with appropriate technical experts. It will be important to align council's response with State and Federal strategies for emissions reduction.

ITEM 2 - ENVIRONMENT, INNOVATION AND ENERGY COMMITTEE STRATEGIC ACTIVITIES REPORT

REPORT IN BRIEF

Reason For Report	Provide update to committee on various strategic activities undertaken by council.
Policy Implications	Nil
Budget Implications	Nil
IPR Linkage	5.7.2.a - Report on sustainability initiatives
Annexures	Nil

File Number	\OFFICIAL RECORDS LIBRARY\GOVERNANCE\COUNCIL MEETINGS\COMMITTEES - REPORTS OF 2022 - 1410944

STRATEGIC ACTIVITY ITEM 1 – EUGOWRA MID-SCALE SOLAR PLANT – Renewable Energy Action Plan (REAP)

DA progressing and finalisation of site layout being undertaken with consultants. Continued exploration of possible external funding through Dpt Regional Development. Revised modelling to be undertaken once electricity procurement carried out – refer to separate report.

STRATEGIC ACTIVITY ITEM 2 – SMART ELECTRICITY METERING - REAP

Meter installation has been completed at the following sites:

- Canowindra Pool
- Molong Caravan Park
- Molong Office
- Molong Sewer Treatment Plant

Council staff can now use the available data to try and gain some insights into the electricity consumption.

STRATEGIC ACTIVITY ITEM 3 – EMISSIONS REDUCTION PLAN (ERP)

Please see separate report.

CENTRAL NSW JOINT ORGANISATION (CNSWJO) ACTIVITIES

Please see separate confidential report.


Australia's
Food Basket
CABONNE COUNCIL


NSW
GOVERNMENT
Treasury


NSW
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1 Executive summary

100% Renewables was engaged by Central NSW Joint Organisation, with support from NSW Office of Energy and Climate Change (OECC), to work with Cabonne Council to develop an Emissions Reduction Plan (ERP) that builds on Council's recently adopted Renewable Energy Action Plan (REAP).

In addition to the REAP, this ERP is informed by the NSW Government's net zero emissions targets and plans that are linked to these, including the Net Zero Plan Stage I 2020-2030, NSW Waste and Sustainable Materials Strategy 2041, and the NSW Electric Vehicle Strategy.

It is intended that this Emissions Reduction Plan helps Council to understand the key abatement levers it has that can enable it to align with the NSW Government's target to reach net zero emissions for the State by 2050, and to set interim targets for emissions reduction.

1.1 Cabonne Council's climate change response

This Emissions Reduction Plan (ERP) for Cabonne Council builds on a number of commitments and plans made by Council in recent years to respond to the challenges and opportunities posed by climate change in the region.

- Cabonne Council's Renewable Energy Action Plan (REAP) was adopted in May 2020 and is based on an analysis of electricity consumption and renewable energy generation opportunities, both on Council-owned facilities and at mid-scale.
- The Cabonne Local Strategic Planning Statement (2020) identifies mitigation and adaptation to climate change and support to the development of renewable energy in the region as *Priority 9* and recognises climate change-related threats to include higher temperatures and less reliable water sources. Efficient buildings, renewable energy, tree planting in towns and implementation of Water Sensitive Urban Design are noted as some of the key measures that can be developed to mitigate these risks.
- Council has reported for many years through regional State of the Environment reports and has a decade of trends for resource consumption – electricity, fuel, waste – and associated emissions, including a significant reduction in electricity consumption since 2014.
- The Orange, Blayney and Cabonne Regional Economic Development Strategy 2018 – 2022 identifies the development of a renewable energy strategy for the region with key stakeholders (across mining and the community) as a key strategy to be progressed.
- The Central West and Orana Regional Plan 2036 recognises in its *Direction 9* that the region has significant potential for renewable energy (wind and solar as well as bioenergy) and prioritises the identification of suitable generation locations with grid access, the development of small-scale local projects and the maximisation of community benefits from renewable energy projects as key priority actions.

1.2 Recommended emissions reduction targets

Based on the analysis and consultation with key stakeholders, the following emissions reduction targets are recommended for Cabonne Council:

- In the first instance it is recommended that Council commit to align with the NSW State Government target of net zero emissions by 2050, or earlier where cost effective and feasible abatement measures allow.
- Set or reaffirm targets linked to the REAP and renewable energy purchasing, such as Council's commitment to source at least 50% of its power from renewable energy.
- Develop interim emissions reduction goals linked to what is feasible for waste emissions reduction in response to the NSW Waste and Sustainable Materials Strategy 2041.

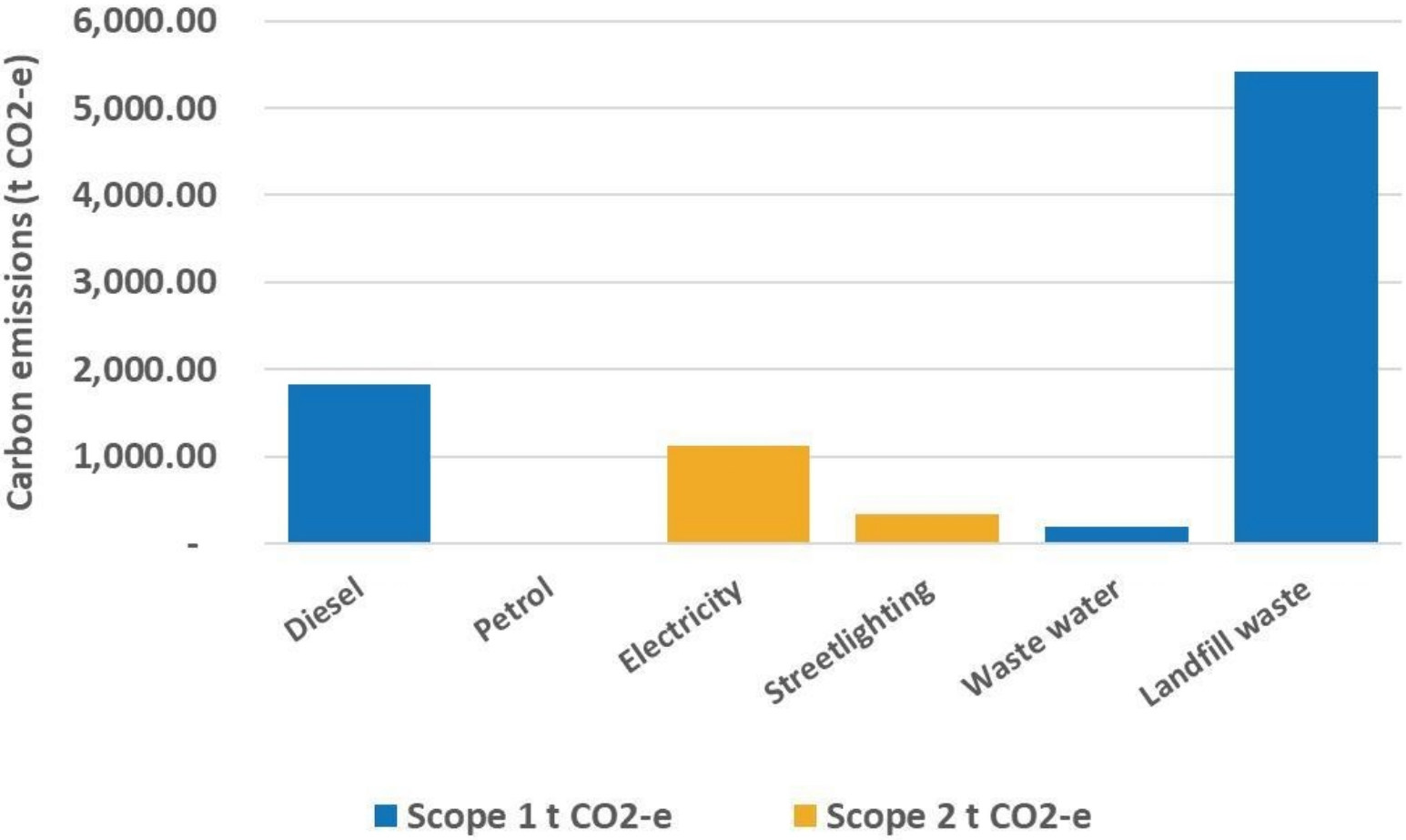


FIGURE 1: CABONNE COUNCIL – FY2019 CARBON FOOTPRINT BY EMISSIONS SOURCE AND SCOPE

TABLE 1: CABONNE COUNCIL – FY2019 CARBON FOOTPRINT BY EMISSIONS SOURCE AND SCOPE

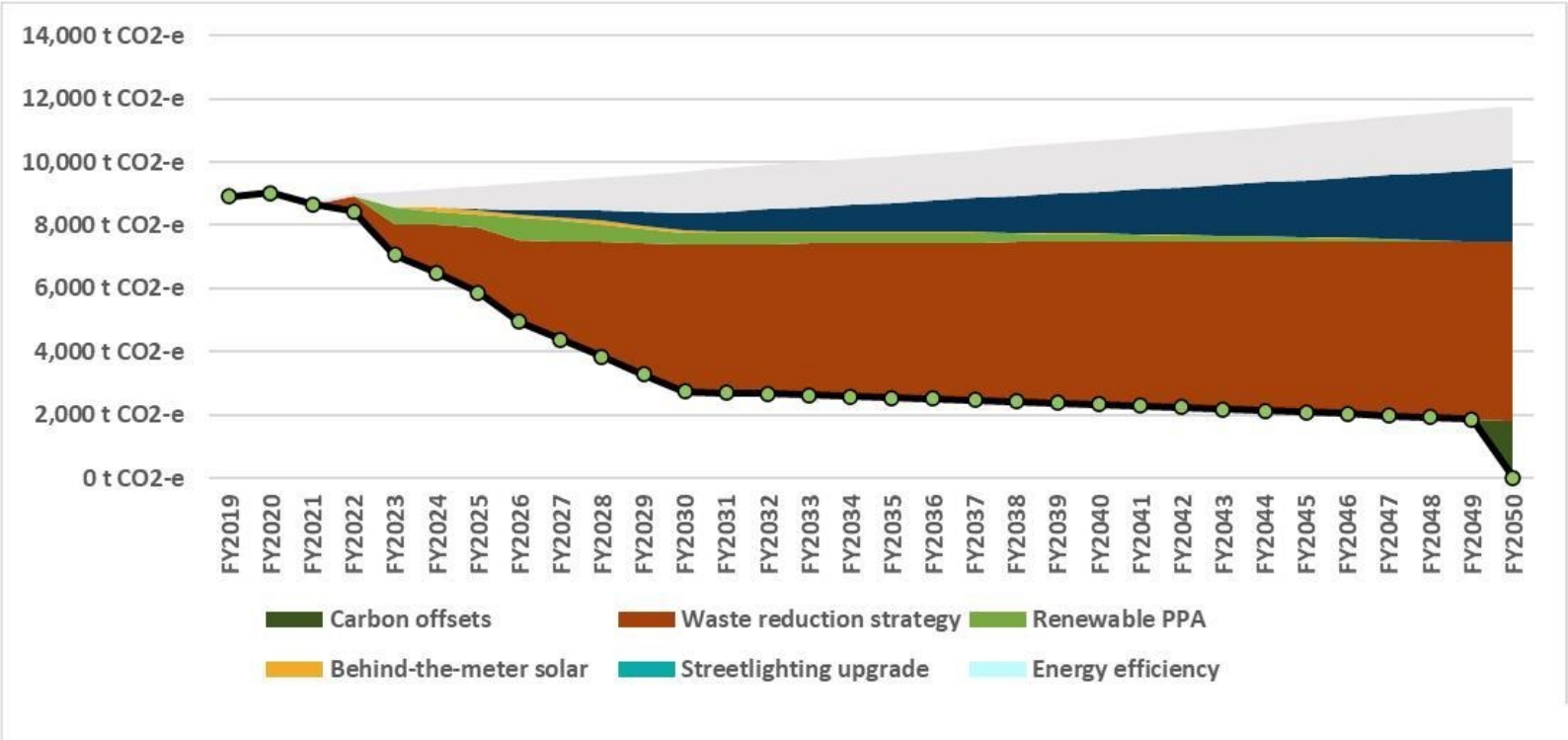
	Emission source	Activity data	Units	Scope 1 t CO2-e	Scope 2 t CO2-e	Total	%
	Diesel	674	kL	1,833.72		1,834	20.6%
	Petrol	4.89	kL	11		11	0.1%
	Electricity	1,424,627	kWh		1,125	1,125	12.6%
	Streetlighting	419,297	kWh		331	331	3.7%
	Waste water	188	t CO2-e	188		188	2.1%
	Landfill waste	4,950	t	5,425		5,425	60.9%
	TOTAL			**7,458**	**1,457**	**8,915**	**100.0%**

Council's carbon footprint builds on the electricity-focused carbon footprint that was developed for the REAP, and now includes emissions resulting from transport, waste deposited in landfills as well as emissions resulting from wastewater treatment operations. Emissions related to the purchase of goods and services by Council, and from the commute to and from work by Council staff (value chain emissions) are not considered in this ERP but may be considered in future revisions to this Plan.

1.4 Roadmap to achieve Cabonne Council's net zero target

Making deep cuts in greenhouse gas emissions that is aligned with the NSW Government's targets of reaching net zero emissions by 2050 and reducing emissions by 50% by 2030 can be achieved by:

- Implement the REAP as adopted in 2020, including renewable energy power purchasing and mid-scale solar,
- Develop a fleet low emissions / EV transition strategy and integrate into fleet planning,
- Align waste management strategies with the NSW Waste and Sustainable Materials Strategy 2041, including emissions reduction targets from higher diversion rates, organics composting and waste reduction,
- Evaluate opportunities for eliminating residual emissions through offsetting or the development of local carbon sequestration opportunities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FY2046
FY2047
FY2048
FY2049
FY2050
Carbon offsets
Waste reduction strategy
Renewable PPA
Behind-the-meter solar
Streetlighting upgrade
Energy efficiency

2 Context for action to reduce emissions

2.1 Climate Change 2021: the Physical Science Basis[1]

Due to all historical carbon emissions, average global temperatures have increased by ~1°C from pre-industrial levels; in Australia it is higher at ~1.4°C. The IPCC's report, *Climate Change 2021: the Physical Science Basis* has issued the strongest call yet for urgent and deep cuts to be made to global greenhouse gas emissions. The Working Group I Report (WGI) says the window to deliver the "deep emissions cuts" needed to prevent the worst impacts of climate change is closing rapidly. Subsequent Working Group reports (WGII and WGIII) set out the impacts of climate change based on the latest data, and the mitigation solutions, progress and pledges. This highlights that while the solutions to decarbonise are commercially available, current pledges and progress fall short of what is required.

The main driver of long-term warming is the total cumulative emissions of greenhouse gases over time. Since 1750, emissions have been more than 2,560 billion tonnes CO_2. A key message from the WGI

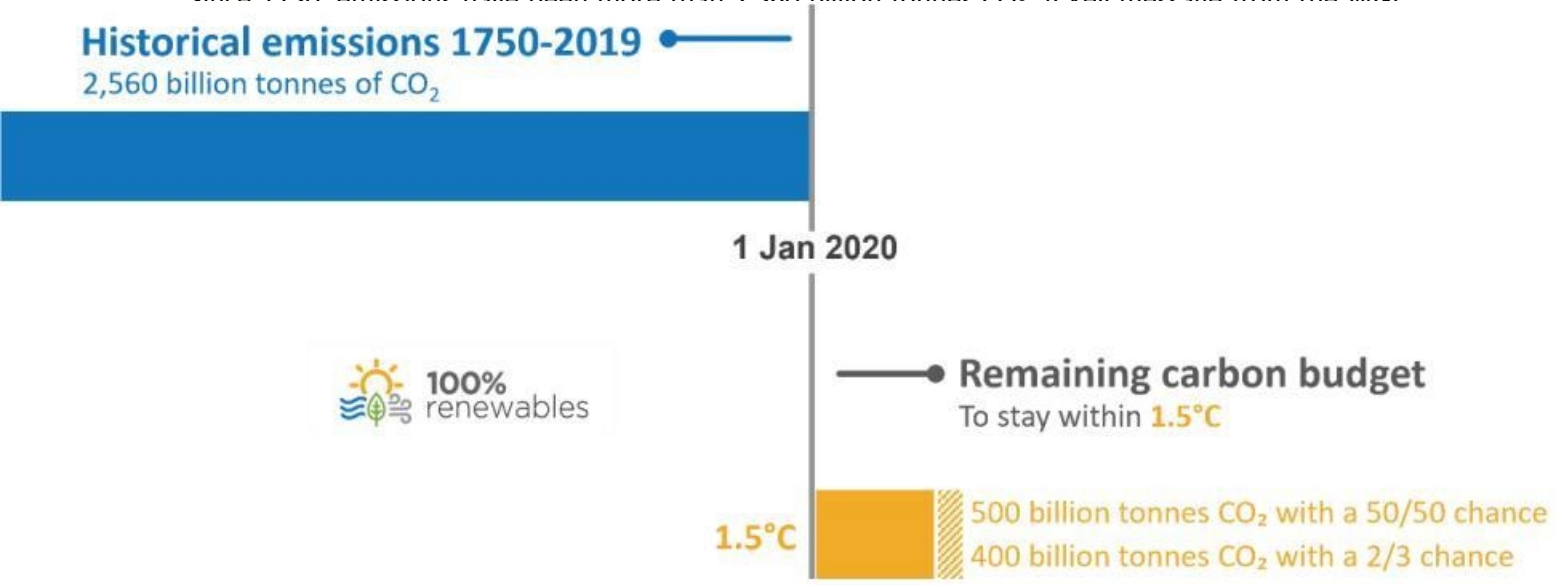


FIGURE 3: REMAINING GLOBAL CARBON BUDGET (ADAPTED FROM IPCC WORKING GROUP I REPORT FAQS)

From the perspective of an organisation, the pathway to follow if a safe future climate is a goal is to ***start today, make deep emissions cuts, and persist on this path for years to reach net zero emissions***. To achieve net zero emissions in a local government context this would mean:

1. GHG emissions from stationary fuel combustion such as LP gas are minimised, and
2. GHG emissions from transport fuel combustion are minimised, and
3. GHG emissions from electricity consumption are minimised, and
4. GHG emissions from waste to landfill and wastewater systems are minimised, and

[1] https://www.ipcc.ch/report/sixth-assessment-report-working-group-i/

5. GHG emissions in the value chain – upstream and downstream are minimised, and

6. Remaining emissions are offset or removed through sequestration measures

2.2 International drivers for climate action

Beyond the second commitment period of the Kyoto Protocol (2013 to 2020), there are several drivers for urgent climate action. These are:

1. **Sustainable Development Goals (SDGs)**

   In 2015, countries adopted the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals[2]. The SDGs came into force on 1 January 2016 and call on action from all countries to end poverty and promote prosperity while protecting the planet.

2. **Paris Agreement**

   To address climate change, countries adopted the Paris Agreement at the COP21 in Paris on

and their synthesis report will be released in 2022, which will bring together the latest science, evidence, and projections for global warming[5].

FIGURE 4: GLOBAL CONTEXT FOR ACTION ON CLIMATE

[2] Sourced from https://www.un.org/sustainabledevelopment/development-agenda/
[3] Sourced from https://www.un.org/sustainabledevelopment/climatechange/
[4] Sourced from https://www.ipcc.ch/news_and_events/pr_181008_P48_spm.shtml
[5] Sourced from ht https://www.ipcc.ch/assessment-report/ar6/

In addition, the World Economic Forum's Global Risks Report 2022[6] highlights adverse climate change-related outcomes as among the most likely to occur with the *highest impacts to the global economy.* A key graphic from the WEF's report highlights the most severe risks to the global economy over the next 10 years.

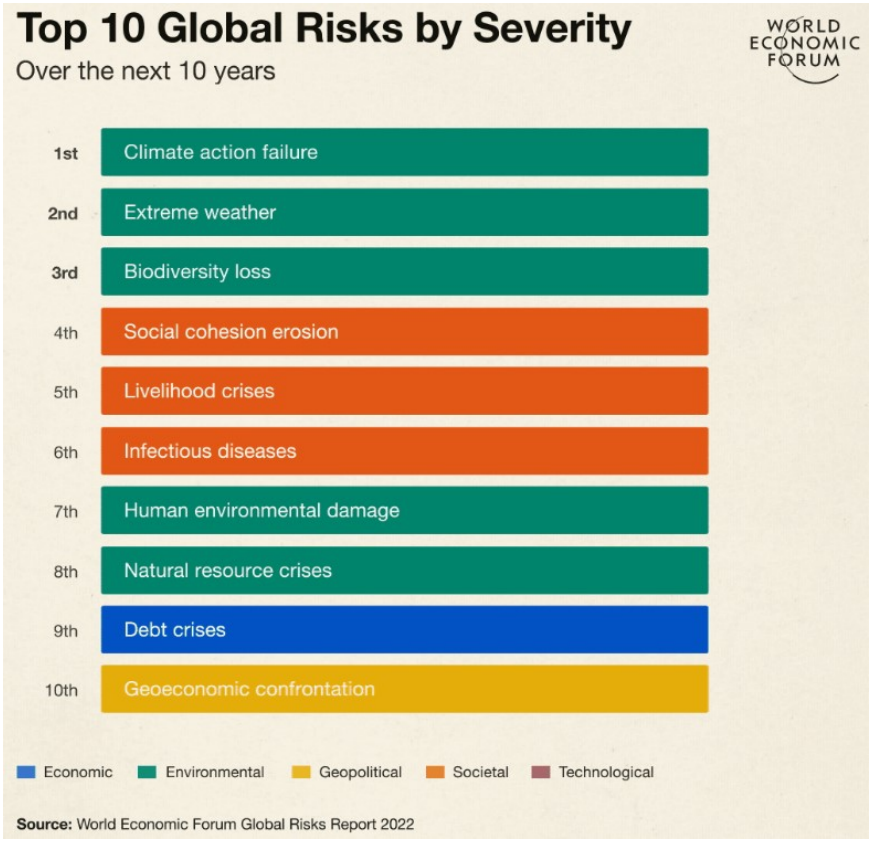


FIGURE 5: GLOBAL RISKS REPORT – RISKS TO GLOBAL ECONOMY

The report is underpinned by the Global Risk Perception Survey (GRPS) and gathers insights from nearly 1,000 global experts and leaders who highlighted the importance and urgency of international collaboration to address the economic, environmental, geopolitical, societal, and technological risks. Climate change continues to be perceived as the severest threat to humanity. Climate action failure, extreme weather, and biodiversity loss rank as the three most potentially severe risks for the next decade.

An increasing number of organisations, including governments, businesses, investors and communities, are conversing on the need for a quicker transition towards net zero emissions and committing to decarbonise. This transition may happen at different speeds, depending on decarbonisation ambitions, political will, economic structures and technological and financial capabilities. For organisations that move faster, close attention to scope 3 emissions is increasingly advantegeous as this will shine a spotlight on value chains and increase focus on organisations, businesses and communities that value climate action initiatives.

[6] WEF_The_Global_Risks_Report_2022.pdf (weforum.org)

2.3 National targets

Ahead of the United Nations Climate Change conference in Glasgow in 2021, Australia's Federal Government set a target to achieve net zero emissions by 2050. There is no legislation at this time that will bind Australia to meeting this goal, however it does bring Australia into line with most of the international community.

More recently, in June 2022 the new Australian Government committed to increase Australia's Nationally Determined Contribution (NDC) under the Paris Agreement. The updated commitment to

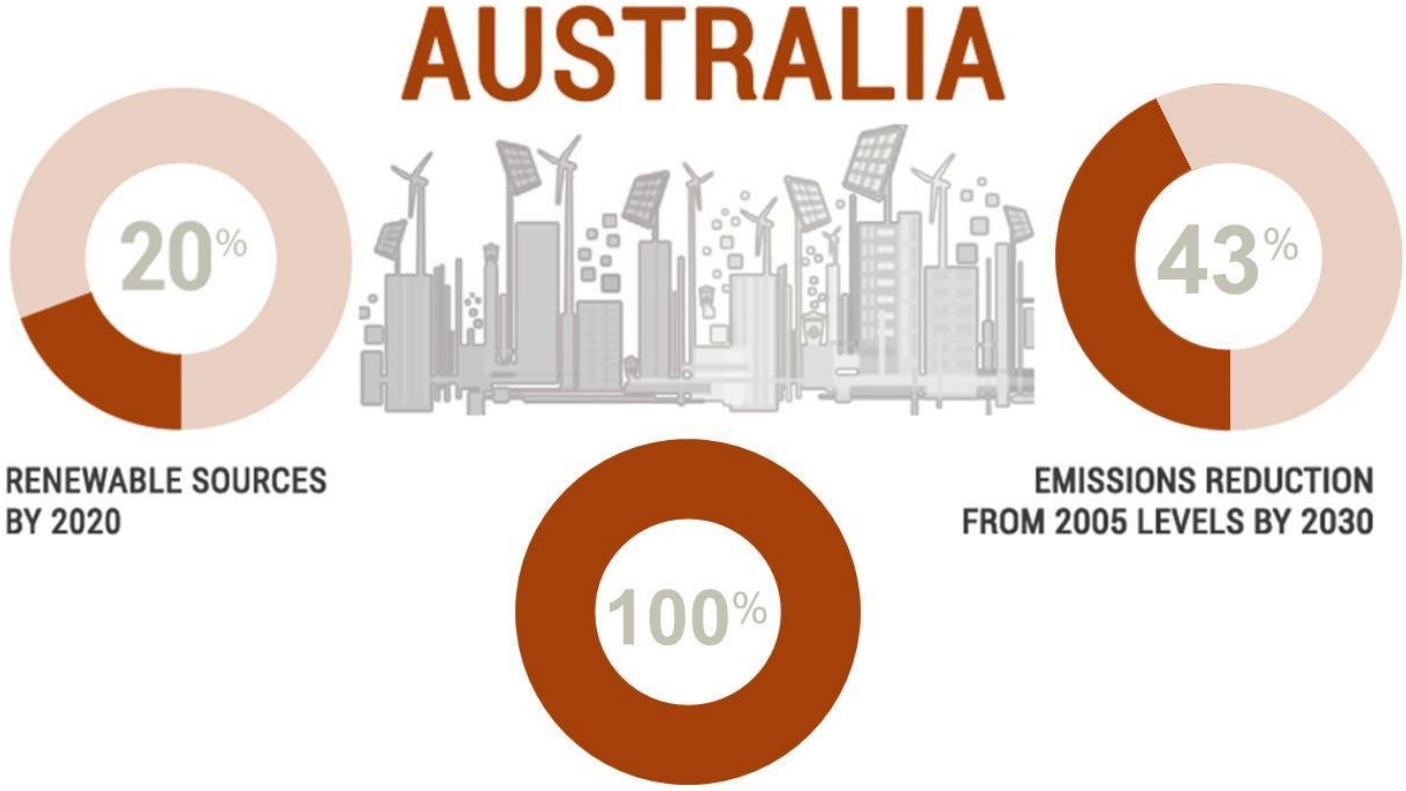


FIGURE 6: AUSTRALIA'S RENEWABLE ENERGY AND EMISSIONS REDUCTION GOALS – NATIONAL LEVEL

According to the Clean Energy Regulator[8], the Renewable Energy target has been met. The RET is the main successful policy underpinning Australia's climate mitigation efforts. Other key initiatives include

[7] March 2018, Australian Government – Clean Energy Regulator. 2018 Annual Statement to the Parliament on the progress towards the 2020 Large-scale Renewable Energy Target.
[8] March 2018, Australian Government – Clean Energy Regulator. 2018 Annual Statement to the Parliament on the progress towards the 2020 Large-scale Renewable Energy Target.

the Climate Solutions Fund, formerly the Emissions Reduction Fund, which sources abatement from eligible activities in the economy via periodic auction processes.

2.4 NSW State targets

All states and territories have established emissions targets as well as some legislated targets for renewable energy, as seen below.

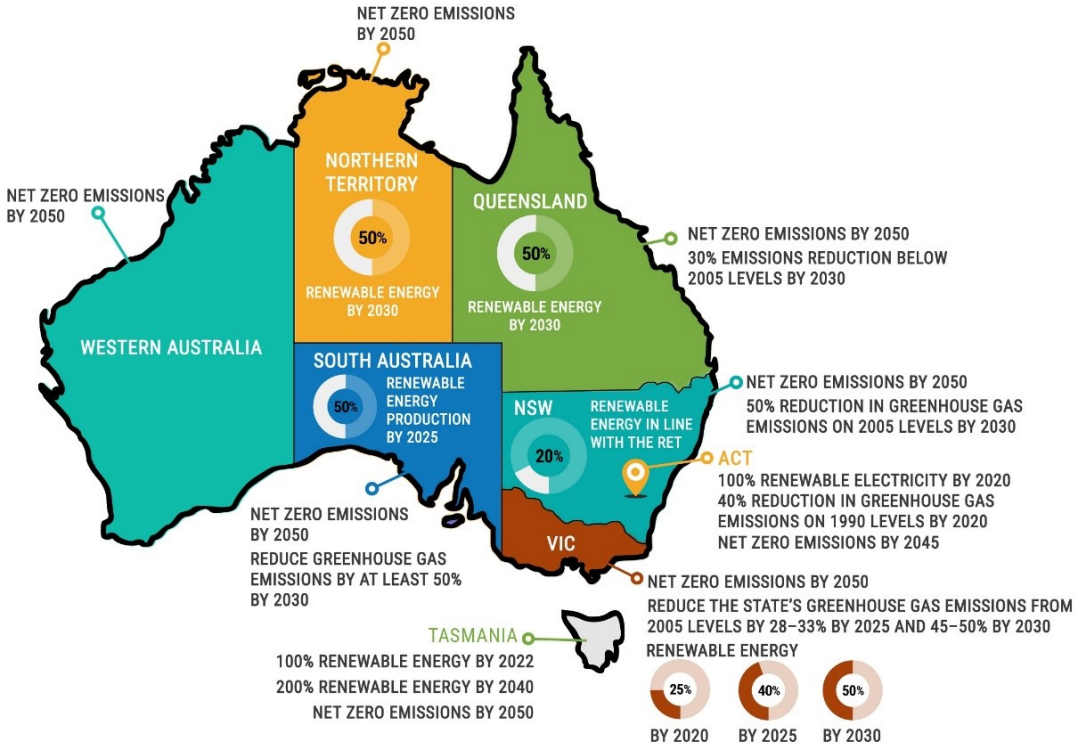


FIGURE 7: AUSTRALIA'S RENEWABLE ENERGY AND CARBON GOALS – STATE & TERRITORY LEVEL

Supporting the NSW Government's commitment to reach net zero emissions by 2050, NSW Government in 2020 released its **Net Zero Plan Stage 1: 2020–2030**[9]. This sees the first of three 10-year plans released that will set a pathway to 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. A Bill before the NSW Parliament (Climate Change (Emissions Targets) Bill 2021) may see these targets legislated in future[10].

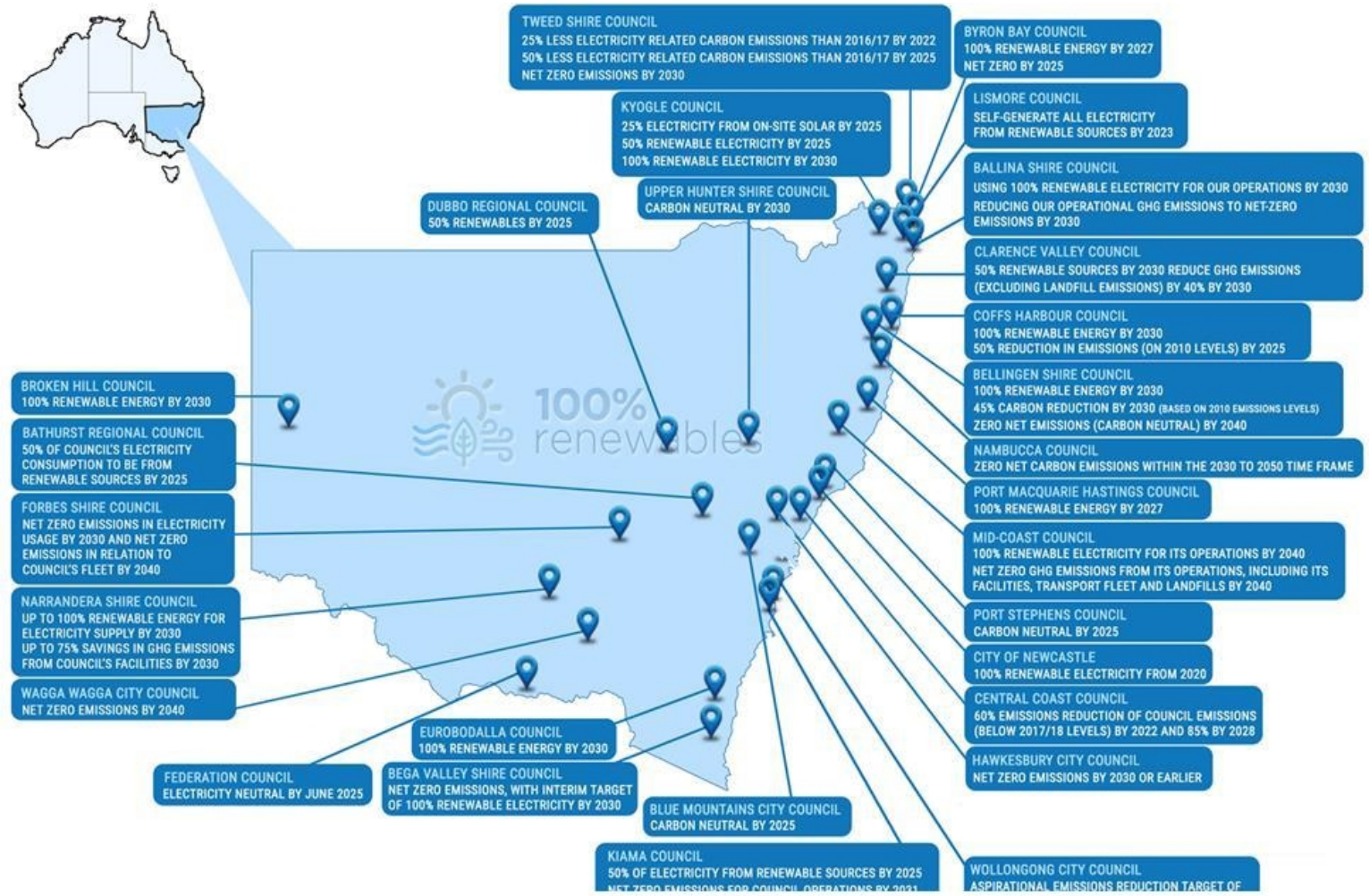
In addition the NSW Government has developed a **NSW Electricity Strategy**[11] which will help the State to deliver on its goal to attract renewable energy investment. On 27th November 2020 the NSW Government passed the *Electricity Infrastructure Investment Bill (2020)* which will help to drive the

[9] © State of New South Wales 2020. Published March 2020
[10] https://legislation.nsw.gov.au/view/pdf/bill/3b9183c2-81eb-40df-af9b-adf118591c37.
[11] https://energy.nsw.gov.au/renewables/renewable-energy-zones

transition to renewables in the state in coming years by coordinating investment in new generation, storage and network infrastructure in New South Wales[12].

2.5 Regional council and NSW communities' emissions reduction targets

When considering whether to set targets for emissions reduction and/or renewable energy, Cabonne Council should consider the goals of their peers in addition to the targets set at national and state



[12] https://www.parliament.nsw.gov.au/bill/files/3818/XN%20Electricity%20Infrastructure%20Investment%20Bill.pdf

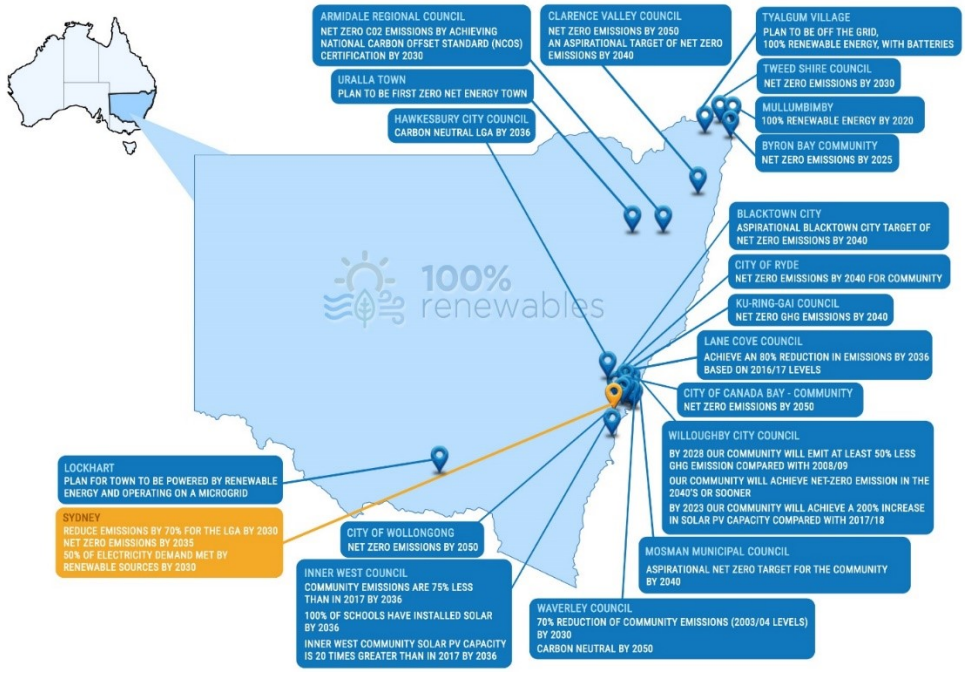


FIGURE 9: EMISSIONS REDUCTION COMMITMENTS BY NEW SOUTH WALES COMMUNITIES AT DEC-21

3 Cabonne Council's carbon footprint

To help differentiate between different greenhouse gas emission sources, emissions are classified into the following scopes according to the GHG Protocol[13] – Corporate Standard:

- **Scope 1 emissions** are emissions directly generated at your operations such as the production of waste, driving company cars, or refrigerant gases in your air conditioning equipment.
- **Scope 2 emissions** are caused indirectly by consuming electricity. These emissions are generated outside your organisation (think coal-fired power station), but you are indirectly responsible for them.
- **Scope 3 emissions** are also indirect emissions and happen upstream and downstream of your business. Typical examples are staff commute, air travel, the purchase of goods and services, contractor emissions, or leased assets.

FIGURE 10: SCOPE 1, SCOPE 2 AND SCOPE 3 EMISSIONS

At this time, Cabonne Council's carbon footprint coverage is limited to scope 1 and scope 2 emissions relating to energy (for facilities and transport), and waste from Council's operations (landfill and wastewater treatment).

Scope 3 emissions are excluded from the ERP at this time, and this can be considered by Council as its journey towards net zero emissions progresses. At that time, emissions coverage would likely be done in accordance with the Australian Government's Climate Active Standard[14]. This standard provides a credible framework for measuring greenhouse gas emissions aligned with the GHG Protocol and achieving carbon neutrality, and provides best-practice guidance on how to measure, reduce, offset, validate and report emissions that occur as a result of the operation of an organisation.

[13] https://ghgprotocol.org/

[14] The Climate Active program is delivered by the Australian Government Department of Industry, Science, Energy and Resources (DISER)

3.1 FY2019 carbon footprint

The 2018/2019 financial year (FY2019) is taken as the baseline year for the ERP. Cabonne Council's FY2019 carbon footprint was **8.915 t CO_2-e**, with landfill waste accounting for 60.9% of total emissions. Table 2 and the chart below (Figure 11) provide further insights into Council's emissions in FY2019.

TABLE 2: CABONNE COUNCIL – FY2019 CARBON FOOTPRINT

	Emission source	Activity data	Units	Scope 1 t CO2-e	Scope 2 t CO2-e	Total	%
	Diesel	674	kL	1,833.72		1,834	20.6%
	Petrol	4.89	kL	11		11	0.1%
	Electricity	1,424,627	kWh		1,125	1,125	12.6%
	Streetlighting	419,297	kWh		331	331	3.7%
	Waste water	188	t CO2-e	188		188	2.1%
	Landfill waste	4,950	t	5,425		5,425	60.9%
	TOTAL			**7,458**	**1,457**	**8,915**	**100.0%**

FIGURE 11: CABONNE COUNCIL – FY2019 DETAILED CARBON FOOTPRINT

3.2 FY2019, FY2020 and FY2021 carbon footprints

The FY2020 and FY2021 carbon footprints were also developed for Cabonne Council. One significant change that has occurred has been the implementation of LED technology for streetlighting. Landfill emissions were estimated based on a single year's aggregate data for each of four landfill sites, and wastewater emissions were estimated based on the population served by each treatment plant and the treatment method employed.

TABLE 3: FY2019, FY2020 AND FY2021 CARBON FOOTPRINTS

	Emission source	FY 2019	FY 2020	FY 2021
	Diesel	1,834 t CO2-e	1,971 t CO2-e	1,682 t CO2-e
	Petrol	11 t CO2-e	11 t CO2-e	15 t CO2-e
	Electricity	1,125 t CO2-e	1,098 t CO2-e	1,177 t CO2-e
	Streetlighting	331 t CO2-e	319 t CO2-e	167 t CO2-e
	Waste water	188 t CO2-e	188 t CO2-e	188 t CO2-e
	Landfill waste	5,425 t CO2-e	5,425 t CO2-e	5,425 t CO2-e
	TOTAL	**8,915 t CO2-e**	**9,011 t CO2-e**	**8,654 t CO2-e**

FIGURE 12: CABONNE COUNCIL – FY2019, FY2020 AND FY2021 CARBON FOOTPRINTS

3.3 Data management plan

Quality data is key to developing reliable greenhouse gas emissions inventories. The inventory was developed based on Council's current data management system. A data management plan is presented below to help improve Council's data collection process for each emission source.

TABLE 4: SUGGESTED DATA MANAGEMENT PLAN FOR CABONNE COUNCIL

Emissions Source	Current data management	Proposed improvements
Diesel	Council provided historical fuel data in a table via email, covering 3 financial years, disaggregated by fuel type. There are no obvious gaps in the data.	None.
Petrol		
LP gas	Nil. LPG purchases are small.	None.
Electricity	Council is using an energy and carbon management software to record electricity consumption.	None.
Streetlighting		None.
Wastewater	No estimation of wastewater emissions is currently performed.	Council can use the 'greenhouse gas calculator for use by NSW utilities' developed by DPE Water for estimating wastewater emissions.
Landfill waste	Landfill emissions were provided as total estimated MSW deposited to each of Council's four landfill sites for the most recent year. Guidance from the National Greenhouse Accounts (NGA) Factors workbook is that organisations that do not know the composition of their waste can use emission factors in Table 49 of NGA, which gives weighted average emission factors for municipal (x 1.6), commercial and industrial (x 1.2), and construction and demolition waste (x 0.2) categories. Cabonne Council's landfill waste was arranged into these three basic categories to develop an estimate of GHG emissions.	• Detailed source-level waste data deposited in landfills, together with recycled waste streams data could be captured in a database (e.g. Excel spreadsheet), and Council should use the National Greenhouse Accounts Factors at the level of waste sub-streams (like food, paper, etc) to develop more robust estimates of emissions at the individual waste stream level. • Having more robust emissions estimation methods may be important in the context of Council's efforts to meet the targets set out in the NSW Waste and Sustainable Materials Strategy 2041.
Green waste	No green waste data were provided.	As with general landfill waste and recycling, green waste collection data and treatment type should be recorded for estimation of emissions.

3.4 Business-as-usual forecast emissions for Cabonne Council

To understand the size of Council's net zero emissions task, it is important to develop both the current carbon footprint, as well as a forecast of future emissions considering expected or forecast changes in Council's operations as well as changes in external factors. In developing a high-level estimate of 'business-as-usual' emissions the following factors are considered:

- New facilities to be built,
- Facilities to be closed or divested,
- Emissions reduction that occurs because of external factors, such as grid decarbonisation,
- Population growth and any resultant increase or decrease in demand for Council services

These 'business as usual' or BAU changes are estimated so that a picture of what Council's emissions could be without any new actions beyond FY2022 to reduce emissions can be developed.

Following this, we develop an emissions reduction pathway, based on the scope, timing and scale of new abatement measures over time, informed by discussions with Council's key stakeholders.

Based on discussions with key stakeholders, the following tabulated BAU changes are forecast to occur and are incorporated into a BAU chart below to FY2050 for Council's carbon footprint.

TABLE 5: BAU CHANGES TO CABONNE COUNCIL'S CARBON FOOTPRINT TO FY2050

Emissions source / facility	Assumed business as usual (BAU)	Timing	Expected impact of BAU on energy demand and/or emissions
Population change	Cabonne Council's Long Term Financial Plan 2020/21 – 2029/30 suggests a very modest population growth of 1% per annum.	FY2022 to FY2050	There is likely to be a marginal increase in many Council services based on population increase
Grid decarbonisation	Coal-fired power stations close at their scheduled end of life and are replaced with renewables	FY2020 to FY2050	The emissions intensity of electricity from the grid decreases over time as coal power is replaced with renewables, in line with Federal Government (DISER) and AEMO forecasts
Fuel	BAU emissions will be aligned with the population growth of Council.	From FY2022	Assumes pre-covid fuel usage on FY2022 with the following values: Diesel - 674 kL Petrol - 4.89 kL From FY2022 there will a 1% year-on-year increase to align with the population growth.

Emissions source / facility	Assumed business as usual (BAU)	Timing	Expected impact of BAU on energy demand and/or emissions
Minor changes in electricity	BAU emissions will be aligned with the population growth of Council.	From FY2022	Assumes electricity emissions will increase by 1% year-on-year to align with the population growth.
Streetlighting	Council has upgraded most of the streetlights (85% complete) to LED. There are no significant plans to expand residential areas.	From FY2022	Assumes no growth in streetlighting usage.
Wastewater	BAU emissions will be aligned with the population growth of Council.	Start FY2022	Assumes wastewater emissions will increase by 1% year-on-year to align with the population growth.
Landfill waste	BAU emissions will be aligned with the population growth of Council. Baseline is emissions as reported in FY2021.	Start FY2022	Assumes waste emissions will increase by 1% year-on-year to align with the population growth.

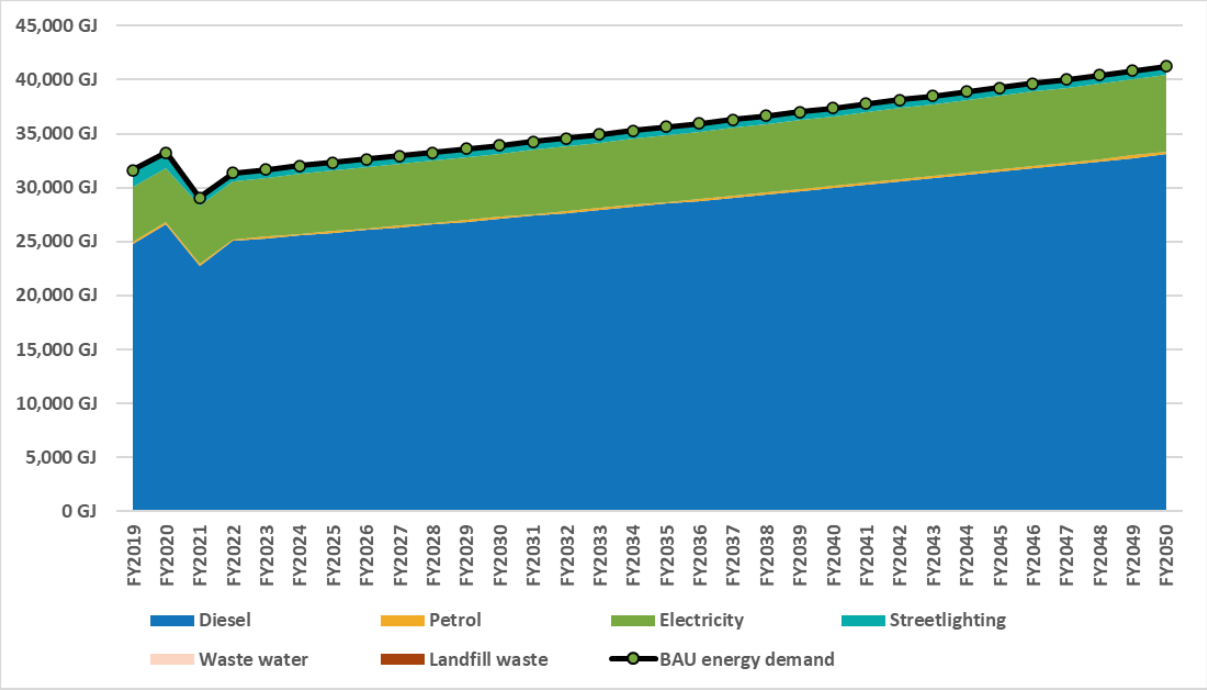


FIGURE 13: CABONNE COUNCIL - BUSINESS-AS-USUAL ENERGY-RELATED EMISSIONS PROJECTION

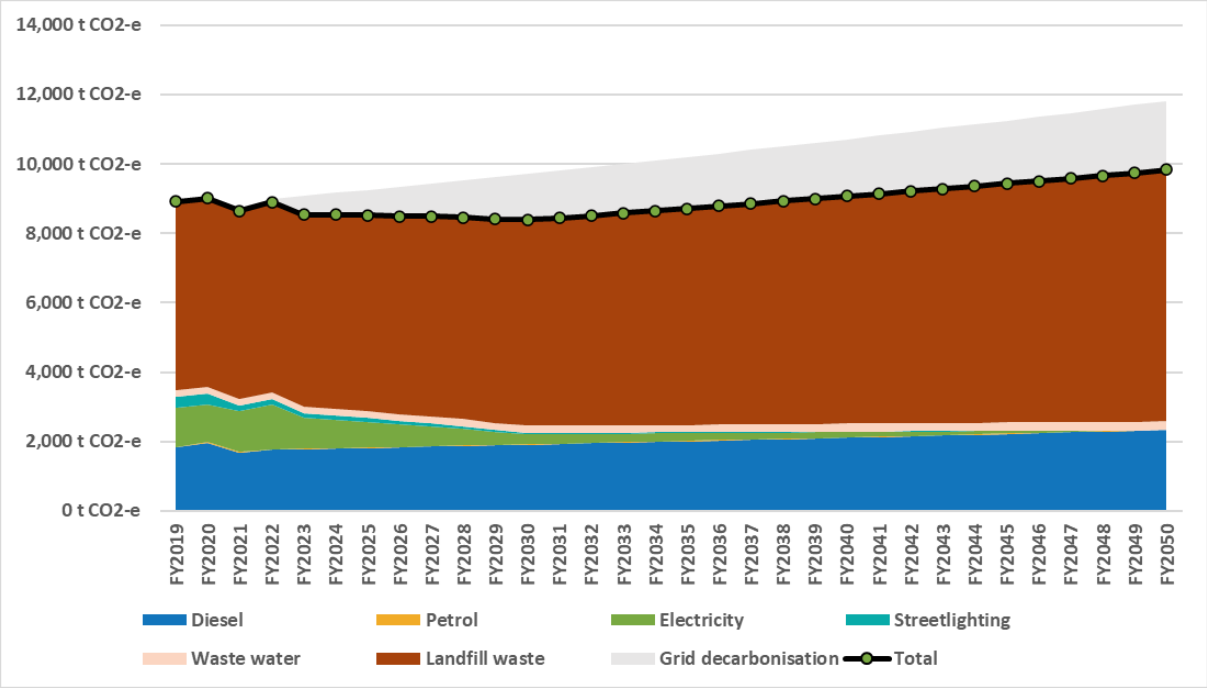


FIGURE 14: CABONNE COUNCIL - BUSINESS-AS-USUAL TOTAL EMISSIONS PROJECTION

3.5 Analysis of landfill waste

Cabonne Shire Council operates 6 Waste Management Facilities located at Canowindra, Cargo, Cumnock, Eugowra, Manildra and Yeoval, providing recycling, solid waste transfer and landfilling. Molong accepts greenwaste, while Cargo and Yeoval function as transfer stations only. Waste has been reduced over the past 15 years due to recycling and diversion of waste from the landfills.

The landfill waste emissions are estimated using National Greenhouse Accounts (NGA) factors at the level of aggregated municipal solid waste, commercial & industrial waste, and construction & demolition waste categories. The total estimated emissions from landfill waste for the last three financial years as shown below. It should be noted that these landfill emissions were estimated based on a single year's aggregate data for each of four landfill sites.

TABLE 6: CABONNE COUNCIL – LANDFILL WASTE

	FY2019 t CO_2-e	FY2020 t CO_2-e	FY2021 t CO_2-e
Net Landfill waste emissions	5,425	5,425	5,425

3.6 Analysis of electricity use by Council assets

Council has a little over 90 electricity accounts, with ~70% of consumption accounted for by the four streetlighting accounts and the top ten facilities as tabulated below.

TABLE 7: CABONNE COUNCIL – GRID ELECTRICITY CONSUMPTION STREETLIGHTING ACCOUNTS

NMI	Site name	FY2019 (kWh)	FY2020 (kWh)	FY2021 (kWh)
4001125185	Canowindra streetlights	121,447	114,967	56,417
4001125186	Eugowra street lighting	44,645	44,730	24,285
4001125187	Molong streetlights	127,811	120,139	67,710
4001125188	Manildra + others street lighting	125,394	124,508	63,477
	All streetlighting	**419,297**	**404,344**	**211,889**

The ~50% decrease in electricity consumption for streetlighting was achieved by upgrading 85% of streetlighting to energy efficient LED technology.

TABLE 8: CABONNE COUNCIL – GRID ELECTRICITY CONSUMPTION TOP TEN FACILITIES

NMI	Site name	FY2019 (kWh)	FY2020 (kWh)	FY2021 (kWh)
4001048683	McCarron Baths - Gaskill Street, Canowindra	192,280	201,029	222,741
4001217759	Health One Molong - 103 Bank St, Molong	146,521	165,123	143,211
4001000601	Molong Office - 99 - 101 Bank St, Molong	144,668	149,517	156,981
4001000600 40010006004	Molong Caravan Park - Watson Street Molong	79,440	72,392	87,461

4001000602 40010006028	Molong Sewerage Treatment Plant - Wellington Road, Molong	74,442	79,936	93,668
4001000604 40010006044	Cudal Office - Main Street, Cudal	65,752	65,821	75,118
4001000603	Googodery Road, Water pump Cumnock	53,075	50,561	10,299
4001019128	Molong Depot - Molong St, Molong	48,991	53,159	53,025
4001065288	Tilga St Canowindra	44,228	40,835	43,682
4001048749	Gaskill Street, Canowindra	41,401	27,325	53,525
	Top 10 facilities	**890,798**	**905,698**	**939,711**

During FY2021, there was a slight increase in the electricity use at McCarron Baths, Molong and Cudal offices, Molong Caravan Park and sewerage treatment plants. There was a significant decrease in water pump electricity consumption (~80%) at Cumnock during FY2021.

3.7 Analysis of fuel use (transport)

Fuel (transport) contributes around 20% of Council's carbon footprint, with diesel reported to account for almost all fuel consumed.

TABLE 9: CABONNE COUNCIL – FUEL USE

Fuel	FY2019 (L)	FY2020 (L)	FY2021 (L)
Diesel	673,745	724,039	618,012
Petrol	4,890	4,683	6,327

3.8 Analysis of wastewater

Wastewater contributes around 1.6% of Council's carbon footprint. The NSW Sewage Treatment Works Calculator was used to estimate emissions based on population served and treatment process.

TABLE 10: CABONNE COUNCIL – WASTEWATER

	FY2019 t CO_2-e	FY2020 t CO_2-e	FY2021 t CO_2-e
Wastewater	188	188	188

1

4 Past and current abatement initiatives

Cabonne Council has implemented a range of initiatives that serve to reduce its emissions below what they would otherwise have been, and further measures are in progress. Past and current actions are tabulated below.

TABLE 11: CABONNE COUNCIL – PAST, CURRENT & PLANNED EMISSIONS REDUCTION ACTIONS

Emissions reduction action	Description of action taken
Streetlighting	85% LED upgrades
Landfill	Waste diversion through recycling Cumnock - about 250 tonnes of recyclable material taken off site Canowindra - about 296 tonnes of recyclable material taken off site
Waste	Green waste collection at all the waste stations
Energy Efficiency	Workshop LED lights upgraded 3-4 years ago
Energy Efficiency	Variable speed drivers for pump station at Molong
HVAC upgrades	HVAC upgrades at new community hall in Molong
Fleet	Around 30 staff cars in total with 5 or 6 hybrids

5 Opportunities to reduce carbon emissions

The following section describes a pathway for Cabonne Council to achieve the NSW state target of net zero emissions by 2050. This pathway will be affected by factors that are both within and outside Council's influence.

1. Grid decarbonisation
    - The NSW electricity grid is decarbonising rapidly, and this will see some of the abatement task delivered without the need for action by the City.
2. Buying clean energy (e.g. via a renewable energy power purchase agreement or PPA)
    - Cabonne Council intends to purchase minimum 50% renewable energy and up to 100% renewable energy over the period of time. From January 2023, Council plans to enter into PPA along with other council members of Central NSW Joint Organisation.
3. Mid-scale reneable energy generation
    - Cabonne Council is seeking to develop a 2.14MW solar plant at Eugowra with 2 x 2.75MWh battery storage, which could form part of a renewable energy PPA.
4. Behind-the-meter solar
    - Council can install onsite solar, plus battery energy storage systems, which reduces emissions in the short to medium term as the grid decarbonises, and delivers long-term cost savings.
5. Energy efficiency
    - Continuing improvement to buildings and other assets, finishing LED upgrades to streetlighting, and incorporating new LED technology and controls into future upgrades.
6. Landfill emissions reduction
    - Increasing FOGO, reducing waste and diversion from landfill in line with NSW State targets to reduce emissions.
7. Sustainable transport
    - For transitioning to low emissions and electric vehicles, with associated charging infrastructure, Council could align their target to transition to EV's with the NSW Government objective of 52% of new cars sales to be EVs by 2030-31.
8. Carbon offsets

- To compensate for the balance of its emissions, Council can purchase carbon offset units. Alternatively, Council could consider carbon sequestration through planting of trees on Council-owned or acquired land

9. Sustainable value chain

    - Waste water management, sustainable design, purchasing of goods & services, capital goods, employee commute

These nine measures are illustrated in the graphic below. Following this, a general summary of the scope, scale, cost-effectiveness and risks associated with each of these abatement categories is presented that can enable the success of the Council's abatement efforts. This is then followed by the development of a pathway that shows how these measures can together deliver the Council's targets, drawing on consultation with key stakeholders.

FIGURE 15: NINE CATEGORIES OF EMISSIONS REDUCTION FOR CABONNE COUNCIL

5.1 Grid decarbonisation

Description

In NSW there are five coal-fired power stations with combined 10,240 MW capacity that supply most of the State's electricity and make up most NSW electricity sector emissions (Liddell, Vales Point B, Eraring, Bayswater, Mt Piper).

The state is largely self-reliant for power, with this supplemented by interstate links as and when required. Since 2010 three coal-fired power stations with 1,744 MW of capacity have closed in NSW (Wallerawang C, Redbank, and Munmorah).

As more coal-fired power stations approach the end of their life – the five coal-fired stations above will likely close between 2023 and the early 2030s' – they are most likely to be replaced with renewable energy. This is most likely to be from large-scale wind and solar PV plants with battery storage, together with Distributed Energy Resources (DER) and demand-side measures.

In recent years several thousand MW of large-scale solar, wind energy and rooftop solar PV generation capacity has been built in NSW and much more is planned. In recent years rooftop solar installations have accelerated.

In September 2021 the NSW Government released the draft declaration of the Central-West Orana Renewable Energy Zone for exhibition. This process will ultimately formalise this REZ under the Electricity Infrastructure Investment Act 2020 and will lead to the development of some 3 GW of network capacity (the expressions of interest process elicited more than 27 GW of renewable energy and storage proposals). Recently, EOIs closed for the New England REZ, where more than 8 GW of renewables and storage will be built in coming years. Other REZs' are proposed to be located at Hunter-Central Coast, Illawarra, and the South-West region of NSW.

Given this shift to renewable energy generation, the future carbon intensity of the NSW grid will decline. The grid emissions intensity will be influenced by a range of factors, and the Australian Energy Market Operator's (AEMO) Integrated System Plan 2022[15] (ISP2022) models scenarios with differing assumptions for key influencing factors including demand drivers, DER uptake, emissions, large-scale renewable build cost trajectories, investment and retirement considerations, gas market settings and coal price settings, together with assumptions regarding policy settings and transmission infrastructure development.

The resultant scenario outcomes for penetration of renewable energy in the NEM is illustrated below, highlighting the increasing likelihood of a rapid transition to renewables.

The NSW Government's Electricity Infrastructure Investment Bill will facilitate the rapid transition to renewables in NSW, and ISP2022 forecasts reflect this.

[15] AEMO: https://aemo.com.au/consultations/current-and-closed-consultations/2022-draft-isp-consultation

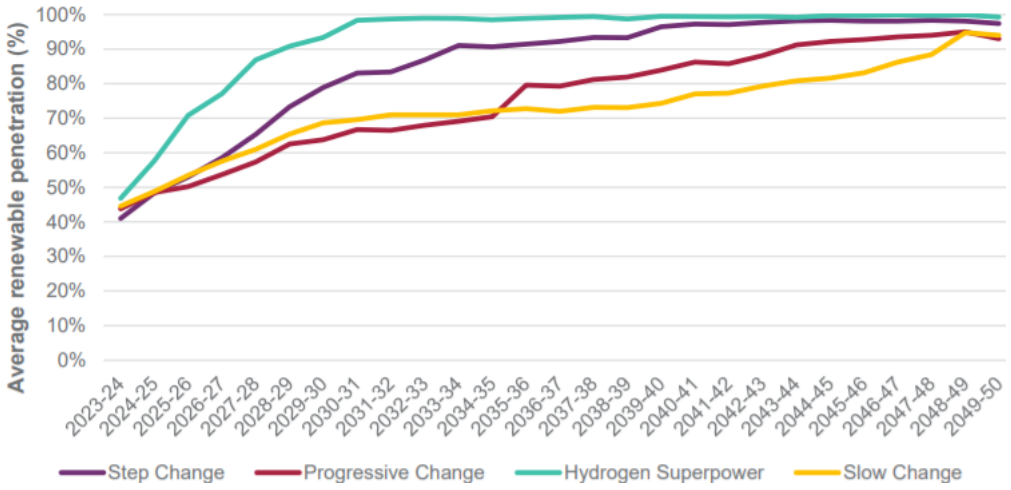


FIGURE 16: AEMO MODEL OF RENEWABLE ENERGY PENETRATION IN ISP2022 SCENARIOS (DRAFT)[16]

Scope for abatement

The above potential change to the NSW grid carbon intensity would impact on energy related GHG emissions for Cabonne Council, with the potential for electricity emissions to move towards zero emissions. Vehicle transition towards EV will also see emissions decline over time as the grid becomes greener.

Under AEMO's current scenarios most of this impact will be seen by the late 2020s. Cabonne Council could see its electricity emissions decline at a faster rate through renewable energy power purchase agreements and other abatement measures.

Risks and mitigation

Cabonne Council has little influence over the rate of change in the grid carbon intensity, and the main risk mitigation strategy is to try and build capacity across Cabonne Council to respond with local solutions to reduce emissions.

Costs and benefits

There is no direct cost to Cabonne Council associated with decarbonisation of the electricity grid, excepting impacts on energy pricing in future years.

[16] AEMO: https://aemo.com.au/consultations/current-and-closed-consultations/2022-draft-isp-consultation

5.2 Buying clean energy

Description

The single biggest opportunity to reduce electricity emissions is to purchase renewable energy and/or renewable energy offsets via Council's electricity procurement process.

There are three main ways in which an organisation can source renewable energy, illustrated below.

The first of these – entering into a renewable energy power purchase agreement (PPA) is by far the most prominent approach, with more than 10,000 GWh of electricity being sourced under PPAs entered into over the last four years, mostly by businesses located in NSW, Queensland, and Victoria. This approach has been taken by several local governments in the National Electricity Market (NEM, eastern states) in recent years and underpins most goals to reach net-zero emissions[17].

Scope for abatement

In November 2022, Council plans to enter into renewable energy power purchasing agreement (PPA), along with other council members of Central NSW Joint Organisation, to source minimum 50% and up to 100% energy from renewable resources, like solar and/or wind. The energy generation from the mid-scale solar farm, that Council is planning to build, may become part of the PPA agreement (see below).

Risks and mitigation

Renewable electricity procurement is well established, and incorporates robust risk assessment processes that address market, delivery, counterparty, policy change and other risks as applicable.

Costs and benefits

The cost savings to Council can be based on an assessment of the difference between the bundled electricity / LGC pricing and the forecast price for wholesale electricity over the contract term. One scenario considered by Council is to sell generated LGCs for the first couple of years, then retire them and claim the clean energy generated for carbon offsets (see below).

[17] Examples of NSW Councils' purchasing renewables as part of their electricity supply include: Southern Sydney Regional Organisation of Councils, City of Sydney, City of Newcastle, Northern Beaches Council, Eurobodalla Shire Council and Hawkesbury City Council.

5.3 Mid-scale renewable energy plant built by Cabonne Council

Description

Council plans to build a 2.14 MW mid-scale renewable energy plant, on its own land, with two 2.75MWh battery storage. The plant is designed to meet most of Council demand.

Council can't simply 'allocate' the renewable energy generated to its sites. If it wants to offset its regular power use with power from its own renewable energy plant, it would do so via a licensed retailer as an intermediary. Council can enter into an agreement with a power company that both generates and retails electricity and the arrangements will be made either via simple power pass-through agreement or by a separate off-take and supply mechanism.

Scope for abatement

The 2.14MW solar plant can generate 3.703 GWh of electricity annually which is almost double of the electricity annual consumption from all Council sites. There may be potential to offset all or most of Council's power needs as well as some of the demand of other Councils, or to receive income from direct supply to the market.

Council could sell the generated LGCs for a time to improve the investment return. During this time, the emissions reduction Council can claim will be zero. In future years if LGCs generated are retired, then Council can offset this against their residual emissions from electricity consumption.

Risks and mitigation

Risk associated with building mid-scale renewable energy plant are mainly around finding the right retailer/generator who will be willing to off-take the council generated electricity. Council also must have a thorough knowledge of wholesale markets in order to manage revenue risk over time.

Costs and benefits

In the current market – with declining wholesale prices, declining LGC prices, and lower offtake rates available for much larger renewable energy projects compared with mid-scale projects, the business case likely favours a PPA-only model to sourcing renewables for Council's facilities.

However continuing declines in costs for mid-scale solar projects, and grant support to community-based renewables may make a mid-scale project viable for Cabonne Council in a near future.

5.4 Behind-the-meter solar

Description

Solar PV is a well-established technology, and nearly 30% of Australian homes and an increasing number of businesses are installing solar panels to reduce their grid energy costs and greenhouse gas emissions. Uptake of battery energy storage (BESS) remains low but is expected to become more cost effective in future.

Current status of solar PV in Cabonne Council

There are no rooftop solar PV installations on Council operated sites at present. The following is a summary of the solar PV and BESS opportunities that have been identified at Council operated sites.

Site name	Behind-the-meter solar potential
McCarron Baths - Gaskill Street, Canowindra	Council could consider implementing a 70.2 kWp ground-mount system subject to land availability. The site electricity demand would be reduced by 38%.
Health One Molong - 103 Bank St, Molong	Council could consider implementing a 43.68 kWp roof-mounted PV system. The site electricity demand would be reduced by approximately by 34%.
Molong Office - 99 - 101 Bank St, Molong	Council could consider implementing a 46.8 kWp roof-mounted PV system across the rear and front side of the building. The site electricity demand would be reduced by approximately by 37%. Council could consider unifying both 4001217759 and 4001000601 NMIs to reduce supply charges.
Molong Caravan Park - Watson Street Molong	Council could consider implementing a total of 21.8 kWp across 4 buildings to reduce the site's demand by approximately 27%.
Sewerage Treatment Plant - Wellington Road, Molong	Council could consider implementing a 29.7 kWp ground-mount system that can reduce the site's electricity demand by 32%.
Cudal Office - Main Street, Cudal	Council could consider implementing a 23.82 kWp roof-mount system that can reduce the site's consumption by approximately 35%.
Googodery Road, Water pump Cumnock	This site was included within top 10 energy usage sites because the energy usage was much higher in 2019 and 2020. In 2021, there was a significant decrease in electricity consumption (approximately 80%) because the pump has been used only as a backup. With the electricity usage at this level, there is no need for solar PV due to the high energy exports and payback time.

Molong Depot - Molong St, Molong	Council could consider implementing a 17.1 kWp roof-mount PV system which could reduce the site's electricity demand by approximately 38%.
Tilga St Canowindra	Council could consider implementing a 13.68 kWp roof-mount PV system to reduce the site's electricity demand by approximately 36%. *Note: The exact address was not avaialble in the time of analysis.*
Gaskill St Canowindra	Council could consider implementing a 16.97 kWp solar PV system to reduce the siste's electricity consumption by approximately 35%. *Note: The exact address was not avaialble in the time of analysis.*

Scope for abatement

Apart from constructing the solar farm at Eugowra, the opportunities for emissions abatement can be summarised as:

- Council-operated sites have scope for approximately **287 kW** of solar PV with no potential to implement battery storage (BESS) due to the low exports and high demand reduction.
- This can generate approximately **467 MWh** of electricity per year with most of this electricity consumed on Council sites.
- The installation of solar PV at the sites above has been modelled between FY 2023 and FY 2025, implementing 1 – 3 projects per year, based on Council's priorities.
- During the implementation years, the abatement range will be between of **104 – 123 t CO2-e**.

Risks and mitigation

Risks associated with solar PV implementation are minimal provided systems are appropriately sized, designed, installed, connected, and maintained on sound buildings and structures, as with any other asset.

The cost effectiveness of solar PV has long been demonstrated, and panel prices continue to fall. The commercial sector has embraced solar PV in recent years, and this has driven further acceleration in the implementation of rooftop solar.

Costs and benefits

Solar is cost-effective and provides good returns for Council's investment. The investment required for solar is estimated at **$341,300**, delivering annual savings of approximately **$91,356** per annum. The annual savings are based on the energy generated by solar PV systems and the electricity rates are based on the electricity bills provided by Council and on the REAP report. The estimated payback period for these systems is **~3.8 years. T**he Water pump at Cumnock was excluded from these

costs and benefits because, with the payback period more than 11 years, it is not an economically viable option. See appendix A for more information.

5.5 Energy efficiency

Description

Energy efficiency remains the cheapest form of greenhouse gas abatement in many situations. Cabonne Council has been implementing numerous energy efficiency upgrades and upgrading to LED is standard practice when replacing Council-owned public lights, passive and active field lights, as well as building lighting.

The most significant energy efficiency upgrade has been the rollout of LED technology for streetlighting. Around 85% of streetlighting has been upgraded to LEDs, as well as LED upgrades at Canowindra and Molong sporting fields.

Efficiency gains can be made via retrofit and asset upgrade works, and lighting typically offers the quickest and the most predictable savings. ICT systems tend to have a rapid turnover compared with other energy-using assets, providing opportunities to upgrade to digital, cloud-based and low wattage IT devices every few years.

Longer life assets such as air conditioning (10-25 years) and motor systems for irrigation and pumping may have short-term opportunities for smart controls and minor retrofits that save power, but the major savings come when these assets are at the end of their life and require replacement and when new water infrastructure is designed and built. As such the rate of improvement in energy use for these services tends to be modest and over a long period of time.

Efficiency plans and budgeting will be informed by regular auditing of facilities and equipment and by Operational Budget planning and Delivery Program planning that considers projects that will continuously reduce energy.

Examples of energy efficiency measures that Council could implement:

- **Lighting upgrades** to LEDs complete the remaining 15% upgrades for streetlighting. The aim is to have the upgrade completed by FY 2025.
- **HVAC system upgrades** for Council halls implemented from FY 2025
- **Variable Speed Drives** installation for pumps at swimming pools and sewerage treatment plants (i.e., Eugowra pool pump upgrade with aim to reduce electricity by 25% from FY 2025)
- **Pumped hydro energy storage** - there may be scope for pumped hydro along Molong Creek which has been included in the total electricity consumption reduction as part of the 1% year-on-year electricity reduction.

Scope for abatement

The scale of abatement will depend on renewable energy purchasing decisions. If 100% renewable energy is chosen, then the scope for abatement is zero but

the scope for cost-effective savings to the Council and better services to the community is high.

Risks and mitigation

The risks associated with energy efficiency upgrades are generally low provided business cases, specifications and contractor management processes are robust. Some of the main risks and mitigants will include:

- Designing effective measurement and verification at an affordable cost that provides useful feedback about the success of projects
- Persistence of energy savings – it is not uncommon, particularly for education initiatives and control settings to lapse in their performance and be changed back to poor practices or inefficient settings, and providing resources to sustain energy savings is also important
- Regular review processes for energy management are important. For example, design guidelines and procurement guidelines should stay at the level of development of new technologies, practices, and services

Costs and benefits

Most energy efficiency upgrades to Council facilities are achieved through annual funding, asset improvement funding for outdoor amenities and sporting facilities, grants, as well as funding committed for upgrading Council's streetlighting.

5.6 Sustainable transport

Description

Transport emissions are a relatively small GHG emissions source for Cabonne Council, primarily from diesel used in truck and plant fleet, and to a far lesser extent in Council's passenger and utility vehicle fleet.

Presently, Council operates 5 hybrid vehicles. The adoption of electric vehicles will depend on charging infrastructure being put in place in the region and in Council's operating sites.

NSW Government's Net Zero Plan 2020-2030 is developing a range of measures that will start to shape the future of transport in the State. Current measures in relation to electric vehicles (EV) include:

- Financial support for purchasing EVs, including:
    - Removal of stamp duty for BEVs under $78,000 from Sept 2021
    - $3,000 rebates for up to 25,000 EVs sold after 1 Sept 2021
- EV infrastructure including:
    - $171 million over four years for ultra-fast charging, EV commuter corridors, destination charging in commuter carparks and regional tourist locations
- Transport Consumer Information
- Fleet optimisation including pilots for vehicle-to-grid and base charging
- EVs in Government fleet, including:
    - Fleet incentives for local councils via reverse auctions
    - NSW Government will electrify its fleet by 2030, with 50% EV procurement by 2026
- Electric buses/trucks

EV charging infrastructure

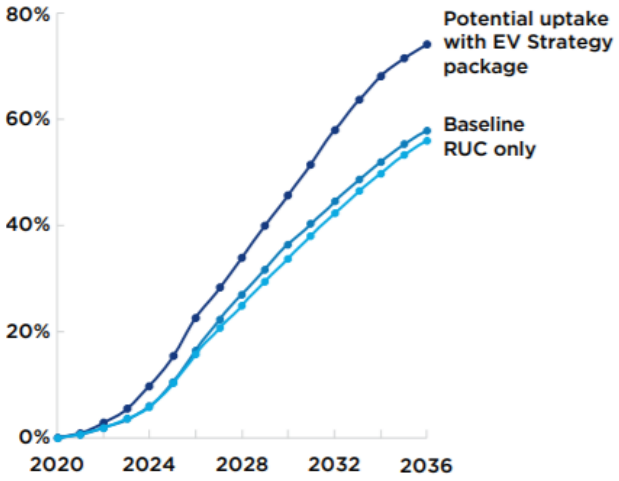
In August 2021 the Electric Vehicle Council reported that there were over 3,000 public chargers in Australia, of which 470 are rapid DC chargers[18]. Locations of DC and public chargers are readily accessible (e.g., via Plugshare)[19]. Increasing numbers of private chargers are also being installed, retrofitted to homes and businesses as well as designed into new buildings.

Projected growth in electric vehicles

[18] https://electricvehiclecouncil.com.au/wp-content/uploads/2021/08/EVC-State-of-EVs-2021-sm.pdf, p11
[19] https://www.plugshare.com/

The NSW Government's Electric Vehicle Strategy[20] forecasts that EVs are expected to make up 52% of new car sales in 2030-31 and it is the NSW Government's objective to achieve that uptake and see most new car sales as EVs by 2035.

Where fuelled with regular grid power in NSW, EVs currently have higher operational emissions than hybrids, whereas when fuelled from renewables this is not the case. As the grid changes with retirements of coal fired power stations, this situation will change and emissions from EVs will become less than those from hybrids.



NSW GOVT EV STRATEGY: FORECAST SHARE OF BATTERY ELECTRIC VEHICLES IN ANNUAL SALES

Availability of electric passenger vehicles in Australia

According to the Electric Vehicle Council[21], Australians now have access to 31 passenger EV models from 12 carmakers, a small increase compared with 2020. A total of 14 EV models are priced at under $65,000. There are currently more PHEV models on the Australian market than BEVs.

By the end of 2022 it is expected that Australians will have access to a further 27 EV models, with 20 of these expected to be BEVs.

Corporate and government fleets make up more than 50% of new EV sales, and many Councils are now developing long term transport strategies that explicitly include a shift in their fleet to low and ultimately zero-emissions fleet.

Commercial Electric Vehicles in Australia

The EV Council also reports that there is still a limited supply of light and heavy vehicles, which include the Renault Kangoo van and several models available from

[20] https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Climate-change/nsw-electric-vehicle-strategy-210225.pdf, p30

[21] https://electricvehiclecouncil.com.au/wp-content/uploads/2021/08/EVC-State-of-EVs-2021-sm.pdf, p07

SEA Electric including a van and minibus as well as specialised vehicles and multiple truck-cab chassis. The EV Council report forecasts that several more models are coming on to the Australian market, but that there is a need for a nationally coordinated approach for this category.

Utility vehicles are commonly used as part of council fleets and can account for a sizeable proportion of fuel use. Plans by manufacturers such as Mitsubishi (Triton), Toyota (HiLux), Nissan (Navara) and Ford (Ranger, Everest) to introduce hybrid-electric models from the mid-2020s have been announced, but the pathway to full-electric utility vehicles may be some years away.

Scope for abatement

In the absence of an EV transition strategy, a gradual transition to EVs has been assumed from FY2025 to FY2050, aiming for an interim target of 35% emissions reduction by 2030 and final target of 100% emissions reduction by 2050.

The scope for emissions reduction for Cabonne Council from transport measures is over 1,800 t CO_2-e from FY2025, where vehicles are supplied with renewables, such as from the Eugowra solar farm, renewable energy PPA or other future initiatives. The speed of emissions reduction will depend on the rate of adoption of EVs and hybrids, and on the selection of renewable energy as the fuel source for EVs.

Risks and mitigation

Cabonne Council should assess the range of factors influencing the uptake of EVs for different types of vehicle users – wholly owned by Cabonne Council, salary-sacrificed by staff, or driven by contractors. Factors will include:

- Whole of Life costing basis that considers purchase price, incentives, resale, and operating costs including electricity price
- Range and charging infrastructure
- Fitness for purpose
- Availability, serviceability, warranties

Costs and benefits

Costs and benefits are not assessed in this plan, and at this time it is likely that the business case for EV will be weak. As EV prices drop and larger commercial vehicle EV options become commercially available, Cabonne Council should assess these on the same total cost-of-ownership basis as is currently done.

5.7 Landfill waste emissions reduction

Description

Landfill waste accounted for 60.9% of Council's emissions in the base year FY2019.

Cabonne Shire Council operates 6 Waste Management Facilities located at Canowindra, Cargo, Cumnock, Eugowra, Manildra and Yeoval, providing recycling, solid waste transfer and landfilling services. Molong accepts greenwaste, while Cargo and Yeoval function as transfer stations only.

The NSW Waste and Sustainable Materials Strategy 2041[22] was developed to update the Waste Avoidance and Resource Recovery Strategy 2014–2021. This is in accordance with the NSW Waste Avoidance and Resource Recovery Act 2001 which commits the NSW government to review and update its waste strategy every five years. The strategy aims to achieve the following emissions-related targets for landfill waste by 2030:

- Implement measures to achieve 10% waste reduction per person by 2030
- Increase FOGO capture to achieve 50% organics collection by 2030
- Implement diversion from landfills to achieve 80% waste diversion by 2030

Given the significance of landfill emissions to Council's carbon footprint, achieving these NSW targets would be necessary for Council to make deep cuts to its emissions and to reach net zero emissions by 2050.

Scope for abatement

Emissions from landfill under business-as-usual modelling is expected to increase from 4,525 t CO_2-e in 2019 to 7,240 t CO_2-e in 2050, based just on a 1% annual population increase. High-level modelling of potential abatement is based on achieving the State targets, and this suggests abatement potential of 5,682 t CO_2-e by FY2050 compared with estimated business-as-usual growth linked to population growth.

However, as waste data is not highly disaggregated and is based on figures grouped into MSW, C&I and C&D categories, the modelling is indicative only, and part of any future waste strategy should be the collation of waste stream data at a more granular level and the application of emissions factors at this level also, to inform the development of strategies that can potentially meet the targets.

Risks and mitigation

Achieving emissions reduction targets for waste is integral to Council's ability to achieve an overall net zero emissions goal. With small landfill operations that are likely unsuited to gas capture, and given the size of the Cabonne LGA, it is likely that there is a high risk that the required abatement can be achieved.

A key goal for Cabonne Council will be to evaluate its options for waste management to achieve these targets, in conjunction with its regional partners and NetWaste, as well as the EPA. Whereas initiatives such as gas capture and flaring and FOGO are feasible and in place for several large Councils with relatively small areas, the State targets will be extremely challenging for regional councils with small dispersed

[22] NSW Waste and Sustainable Materials Strategy 2041

populations across large areas. While local solutions such as converting sites to transfer stations have been feasible and been implemented, achieving the emissions reduction goals may call for regional solutions and more resources.

Costs and benefits

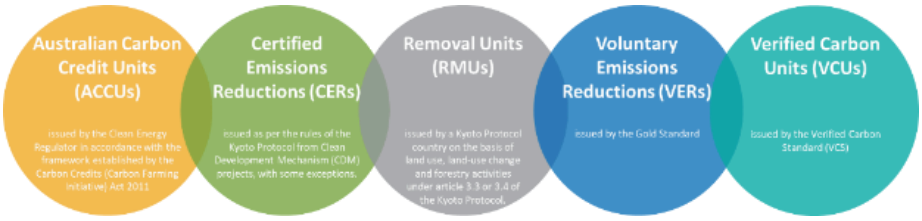
Costs and benefits associated with Council's waste management abatement measures are not estimated as part of this project and should be evaluated through the development of a waste strategy that includes the State's targets and is done in consultation with regional partners.

5.8 Carbon offsets

Description

If Council wishes to purchase carbon offsets to meet all or some of any potential shortfall to net zero emissions, then it should consider buying offsets that are approved under the Climate Active Standard. These include:

- Australian Carbon Credit Units (**ACCUs**) issued by the Clean Energy Regulator in accordance with the framework established by the Carbon Credits (Carbon Farming Initiative) Act 2011 which has now been amended to establish the Emissions Reduction Fund (ERF).
- Certified Emissions Reductions (CERs) issued as per the rules of the Kyoto Protocol from Clean Development Mechanism (**CDM**) projects, with some exceptions.
- Removal Units (**RMUs**) issued by a Kyoto Protocol country on the basis of land use, land-use change and forestry activities under article 3.3 or 3.4 of the Kyoto Protocol.
- Voluntary Emissions Reductions (VERs) issued by the **Gold Standard**.
- Verified Carbon Units (VCUs) issued by the **Verified Carbon Standard** (VCS).



Another option for compensating for remaining carbon emissions is by creating Council's own offsets through sequestration. The "Mixed Environmental Planting" ERF methodology set up by Clean Energy Regulator describes two key actions that could be considered by Council:

- **Reforestation by environmental or mallee planting** which involves establishing and maintaining native vegetation on land that has been clear for at least 5 years
- **Avoided clearing** action which involves retaining areas of native forest that would otherwise be cleared

Scope for abatement

The scale of the carbon offsets / sequestration task is the net emissions left after the other types of abatement measures have been implemented. The other types of emission reduction measures have been described in previous chapters and include grid decarbonisation, buying clean energy, mid-scale renewable energy generation, energy efficiency, sustainable transport and landfill emissions reductions. The required carbon offsets to reach net zero by 2050, after these abatement measures have been implemented, could be approximately **1,558 t CO2-e** (this equals the total emissions generated by Council's operations less the impact of abatement measures).

Risks and mitigation

Local assessments based on current and planned tree plantings, the actual size and condition of available areas, and other local factors should be used to develop more correct estimates of this potential.

Costs and benefits

Costs and benefits have not been assessed in this report.

5.9 Sustainable value chain

Description

Based on the current scope of Council's carbon footprint, opportunities for Cabonne Council to make deep emissions cuts encompass landfill emissions, renewable energy power purchasing (PPA), installing solar PV systems, improving energy efficiency, switching gas to electric technologies, sustainable transport, in addition to grid decarbonisation.

Sustainable procurement processes underpin these opportunities and can also incrementally reduce the Council's broader scope 3 (value chain) emissions over time through multiple individually small purchasing decisions, such as for building materials, appliances, ICT equipment, etc.[23]. Three components to sustainable procurement include:

- Policy frameworks that incorporate a sustainable procurement focus and weight low emissions / good environmental outcomes
- Engagement and training of staff to drive use of a sustainable procurement framework in all aspects of Council operations
- Continual review of equipment and services specifications, to identify opportunities to incorporate the sustainable procurement framework into the procurement and use of equipment and services

Sustainable procurement policy and framework

A policy relating to sustainable procurement can set out Council's overall intent to procure products and services with consideration of Council's sustainability goals, such as emissions reduction, energy efficiency and water conservation (among others). Alongside a policy, Council should develop its internal sustainable procurement guidance, drawing on an appropriate framework, such as the NSW Sustainable Procurement Guide for Local Government[24].

The Sustainable Procurement Guide for NSW local governments aims to help Councils develop and embed sustainable procurement practices in their organisation. The guide presents information on key concepts, certifications, standards and processes and is designed for all council staff involved in any purchasing. The Guide is applicable from major tenders through to one-off equipment purchases.

Council should examine the guide to identify key areas within its procurement processes where this can add value and lead to more informed and better procurement decisions.

Engagement & Training

Even with a policy and sustainable procurement framework in place, decisions to source services and products that deliver best practice emissions reduction

[23] Scope 3 GHG emissions are emissions upstream and downstream of the Council's operations, and are associated with goods and services sourced for council activities.

[24] Sustainable Procurement Guide for Local Governments in NSW, 2017: https://www.lgnsw.org.au/files/imce-uploads/127/esstam-sustainable-procurement-guide-30.05.17.pdf

outcomes will happen when people who are buying these services and products take these decisions.

Underpinning this should be a program of continuing engagement, education and training of staff who procure services and products. This could encompass:

- Capital works staff involved in the design of new projects such as new / renovated community facilities, or new / renovated parks & reserves, where energy and water efficiency and onsite renewables and battery storage could be specified,
- Sourcing of professional and other services for Cabonne Council,
- Roads and pavement construction and repair / maintenance teams who specify the types of materials to be used, where there may be opportunities to use more sustainable materials,
- Fleet procurement staff who assess plant and vehicle needs and specify new purchases and leases that will impact fuel use and other environmental performance measures for several years,
- Operational staff who may repair or replace equipment as it fails, such as appliances, air conditioners, lights, where there are opportunities to ensure that replacements are fit for purpose and energy efficient

Design, Equipment and Services Specifications

Policy, procurement frameworks and education / training should ultimately lead to the specifications for services and works / products being continually improved to include Council's requirements for low or net zero emissions.

In addition, the evaluation criteria and weighting of responses to tenders and quotes should be periodically revised to evaluate and weight performance against these updated emission requirements, while achieving the other key goals of Council's procurement policy. Products and services where Cabonne Council could continually update specifications include:

- **Road and pavement construction**: look to source low embodied emissions materials and encourage or require potential suppliers to reduce emissions in their materials.
- **Building design policies:** Cabonne Council can continue to go further than code requirements, by requiring new buildings to be 6-Star Green Star (design and as-built) and having a pathway for ongoing improvement in its design requirements to work towards the implementation of 'net-zero buildings'.
- **Business Services**: procurement of services is typically a significant source of emissions in a local government's value chain. By requiring that suppliers of services to Council lower their own emissions (e.g., by being certified Climate Active carbon neutral), scope 3 emissions can be significantly reduced.
- **Building lighting:** design and replacement with LED and smart controls together with passive measures to reduce demand for lighting.
- **HVAC:** many facilities will see air conditioning replaced over the next ten years, providing opportunities to improve passive heating and

cooling, specify efficient fit-for-purpose technologies and smart controls, and specify low and zero-emissions refrigerant gases.

- **Power & appliances:** Power and appliances represent a modest % of electricity use, including servers that run 24/7, office equipment such as computers, copiers and printers, and appliances like fridges, boiling water units, microwaves, dishwashers, and televisions. Efficient appliances and 'green IT' options are available, and many are already being pursued, and specifications can be developed that ensures all equipment such as these is energy efficient when purchased.
- **Wastewater and irrigation pumps** are upgraded or rebuilt from time to time. Upgrades offer opportunities to assess system design, evaluate VSD opportunities and improve control systems, such as moisture sensors.
- **Public park and reserve lighting:** LED and solar lighting are becoming the default technologies here for the City.
- **Sporting oval lighting:** it is increasingly common to select LED as the default technology for new sporting oval lighting. Smart controls can both centralise oversight and provide users with control and incentives to manage their use of sports lighting.

Scope for abatement

The scope for abatement from sustainable procurement can be sizeable, with incremental gains made via all purchased goods and services over the long-term complementing potentially large abatement from the procurement of electricity from renewables via supply agreements and the sourcing of electric vehicles. Cabonne Council also has the capacity to influence emissions reduction by its suppliers and contractors, and this may be increasingly important in future years in the context of reducing value chain emissions to reach net zero emissions.

Risks and mitigation

An assessment of risks and mitigation strategies would be part of any periodic review of procurement policies and processes for goods and services.

Costs and benefits

A robust sustainable procurement approach would see sustainable services and goods sourced on a whole-of-life cost basis, which will tend to favour efficiency and lower lifetime cost. Similarly, contractors and suppliers who are sustainable in their own operations are likely to have lower, not higher costs.

6 Emissions reduction pathway development

6.1 Stakeholder engagement

100% Renewables held a series of meetings with key stakeholders from Cabonne Council to get an insight into current actions that will have an influence on emissions, and to get input on potential new actions that can reduce emissions over time. The stakeholder consultation summary is shown in the table below.

TABLE 12: SUMMARY OF STAKEHOLDER CONSULTATION

Key stakeholder	Area of discussion	Date
Nathan Stubberfield	Innovation & Technology	21/12/2021
Charlie Harris	Urban Infrastructure	07/02/2022
Michael Fitzgerald	Plant & Depots	07/02/2022
Todd Saxelby	Environmental Services	09/02/2022

6.2 Development of an emissions pathway to 2050

Resulting from meetings with stakeholders, 100% Renewables has built a potential emissions reduction pathway that Cabonne Council could implement to reduce its carbon footprint to meet the target emissions level. It is noted that this is based on a combination of BAU assumptions as documented above, known initiatives such as renewable energy power purchasing and streetlighting upgrades, on possible abatement pathways for sources such as transport and value chain emissions, and assuming that the State's targets for emissions reduction from waste can be achieved. The feasibility, timing and scale of any of the measures included in the pathway may well change over time, and this pathway therefore highlights one possible scenario.

TABLE 13: OPPORTUNITIES FOR CABONNE COUNCIL TO REDUCE ITS CARBON FOOTPRINT

Emissions source	Scenario to reduce emissions
Purchased electricity	Council enters a PPA with 50% RE purchase from FY2023 to FY2025 and 100% RE purchase from FY2026 onwards.
Electricity – on site solar PV and batteries (behind-the-meter solar)	Establishment of solar PV systems on 10 sites with highest electricity usage from FY2023 to FY2025. The modelling selects 1-3 projects per year from the top sites. The number and order of project implementation may change based on Council's plans and targets.
Electricity – energy efficiency	HVAC system upgrades and operation improvement and implementation of SCADA system and VSD for water treatment stations. Assuming there will be a 1% year-on-year reduction in electricity BAU from FY2025 to FY2050.
Streetlighting – energy efficiency	Implementation of the remaining 15% reduction potential due to streetlighting LED upgrades from FY2025.
Transport fuel	Align with the NSW Government's EV Strategy. Gradual transition from diesel and petrol to EV starting from FY2025 with the target of 35% transition by FY2030 and complete transition to EV by FY2050.
Landfill waste	80% diversion from landfill (assumes 50% organics diversion occurs within this) and 10% overall waste reduction in the community by FY2030

Emissions source	Scenario to reduce emissions
Carbon offset	Council will sequester emissions over time or purchase carbon offsets in FY2050 to achieve net-zero status

The assumptions in the above table are reflected in the graphs below to show a energy and emissions roadmap for Council.

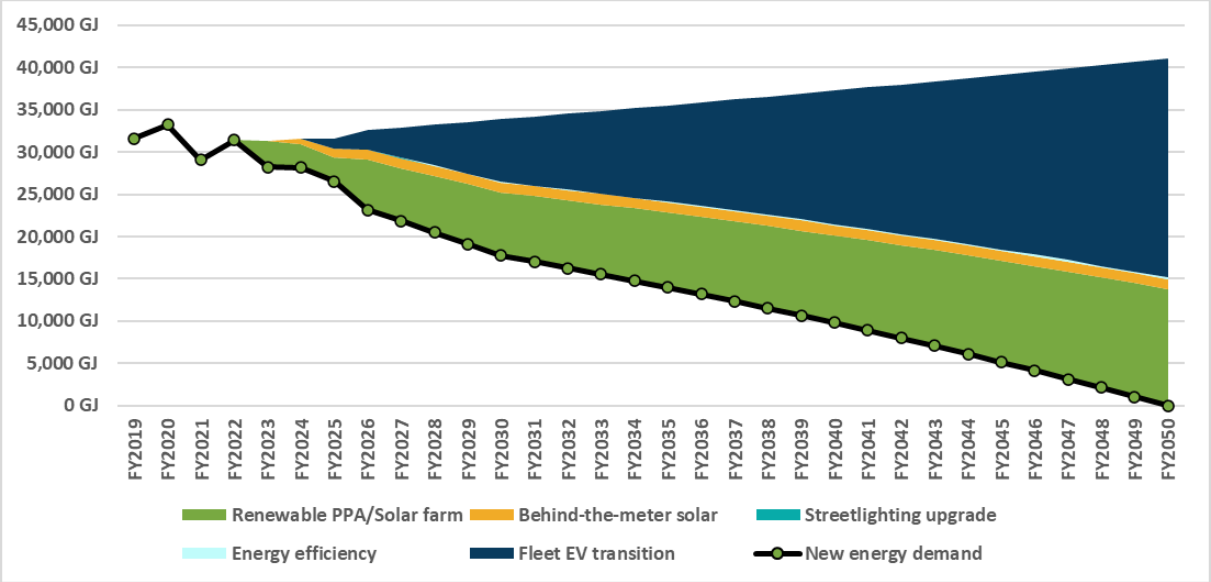


FIGURE 17: CABONNE COUNCIL'S ENERGY ROADMAP FOR EMISSIONS REDUCTION

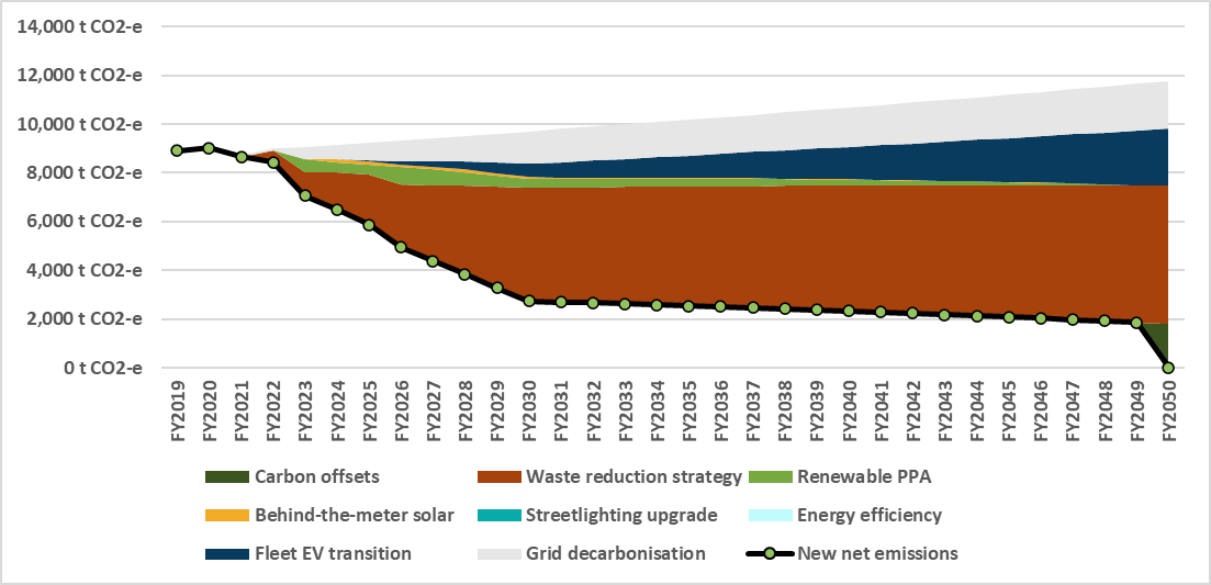
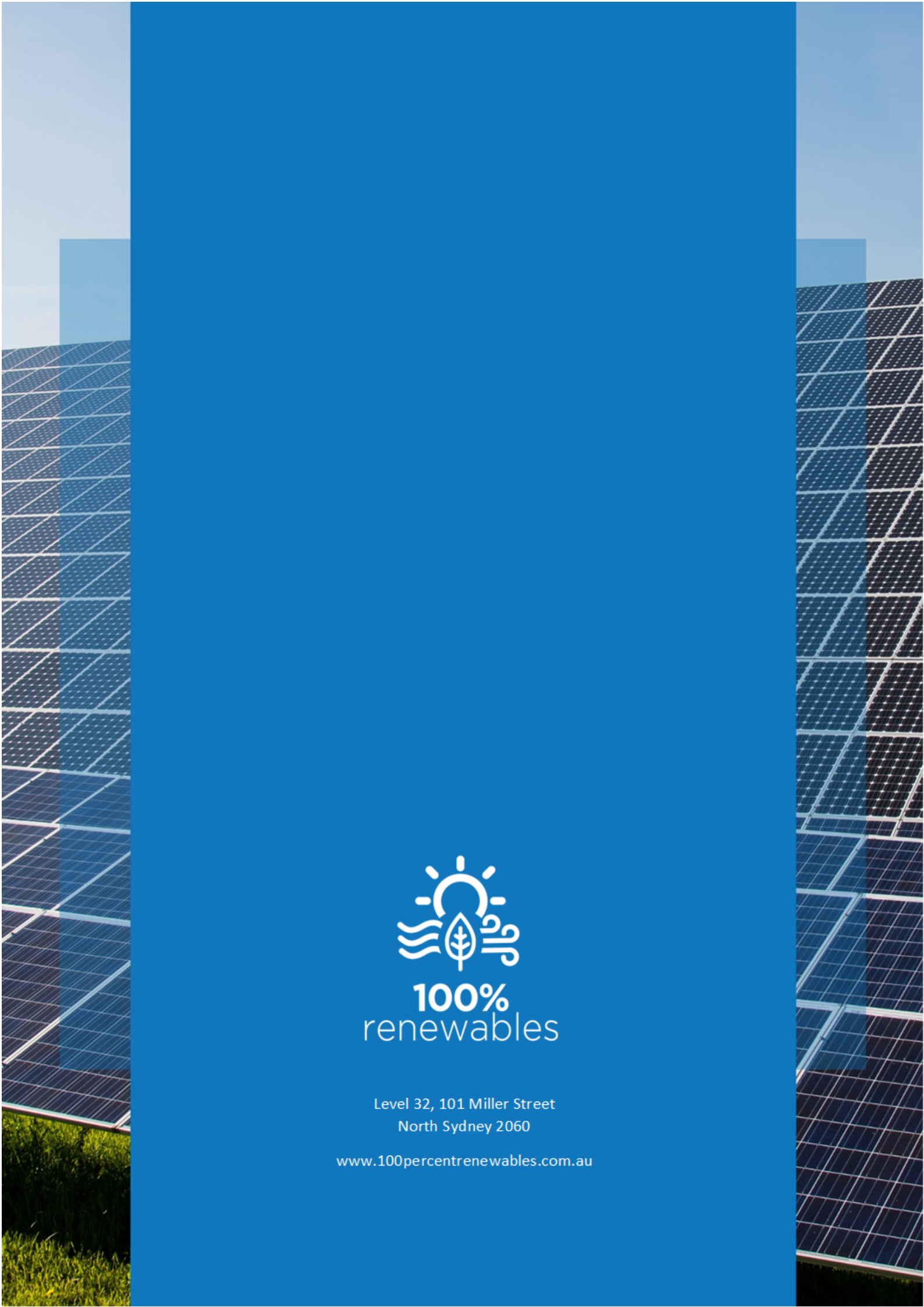


FIGURE 18: CABONNE COUNCIL'S EMISSIONS REDUCTION PATHWAY WITH ADDITIONAL CARBON OFFSETS

APPENDIX A

TABLE 14: SUMMARISED SOLAR PV OPPORTUNITIES AT CABONNE COUNCIL

Site name	Electricity consumption FY2021 (kWh)	Solar PV size (kW)	Solar generation (kWh/yr)	Savings (kWh/yr)	Electricity reduction	Exports	Capital Cost ($)	Electricity rate ($/kWh)	Feed-in tariff ($/kWh)	Savings ($/yr)	Payback (yr)	Source
McCarron Baths	222,741	70.20	123,806	86,797	38%	30%	$91,260	$0.28	$0.05	$25,057	3.8	100%RE
Health One Molong	143,211	43.68	71,430	49,930	34%	30%	$50,232	$0.28	$ 0.05	$10,943	3.6	REAP
Molong Office	156,981	46.80	66,614	56,233	37%	16%	$53,820	$ 0.28	$0.05	$11,633	3.6	REAP
Molong Caravan Park	87,461	21.80	33,660	23,562	27%	30%	$25.070	$0.27	$0.05	$ 6,286	4.0	REAP
Molong Sewerage Treatment Plant	93,668	29.70	52,920	36,639	32%	31%	$38,610	$ 0.28	$0.05	$9,814	3.8	REAP
Cudal Office	75,118	23.82	37,559	26,291	35%	30%	$27,393	$0.29	$ 0.05	$7,043	3.7	REAP
Water pump Cumnock	10,299	3.00	5,517	86	1%	98%	$3,450	$0.28	$ 0.05	$293	11.8	REAP
Molong Depot	53,025	17.10	28,760	20,132	38%	30%	$19,665	$0.27	$0.05	$5,453	3.6	REAP
Tilga St Canowindra	43,682	13.68	19,890	13,489	36%	37%	$15,732	$0.29	$0.05	$3,949	4.1	100%RE
Gaskill St Canowindra	53,525	16.97	26,763	18,734	35%	30%	$19,519	$0.28	$0.05	$5,441	3.8	100%RE
Top 10 facilities	**939,711**											



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