



Energy Strategy & Implementation Plan 2020 – 2025

Adopted by Dubbo Regional Council 24 February 2020



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Acronyms

Acronyms

AEMO	Australian Energy Market Operator
APVI	Australian Photovoltaic Institute
BEEC	Building Energy Efficiency Certificate
BMS	Building Management Systems
CBD	Commercial Building Disclosure
CCF	Climate Change Fund
CO ₂	Carbon dioxide
COAG	Council of Australian Governments
CPP	Cities Power Partnerships
DRC	Dubbo Regional Council
E3	Equipment Energy Efficiency
ERF	Emissions Reduction Fund
EUA	Environmental Upgrade Agreements
EV	Electric Vehicle
GHG	Green House Gas
GWh	Gigawatt hour
HVAC	Heating, ventilation and air conditioning
ICE	Internal Combustion Engines
kWh	Kilowatt hour
LED	Light emitting diode
LGA	Local Government Area
LNG	Liquified Natural Gas
NABERS	National Australian Built Environment Rating System
NEG	National Energy Guarantee
NRMA	National Roads and Motorists' Association
OEH	Office Environment and Heritage
PPA	Power Purchase Agreement
PV	Photo Voltaic
RET	Renewable Energy Target
SDGs	Sustainable Development Goals
SSROC	Southern Sydney Regional Organisation of Councils
TLA	Tenancy Lighting Assessment
WWTP	Waste Water Treatment Plant

1 Introduction

The Dubbo Regional Council Energy Strategy and Implementation Plan is designed to support and guide Council in reducing energy consumption, increasing energy efficiency, increasing the use and adoption of renewable energy resources and sustainable transport while taking into account the needs and desires of a growing community. The Strategy and Implementation Plan also seeks to support the local community in becoming energy smart.

Council's requirements for the development of an Energy Strategy and Implementation Plan has arisen from the 2040 Community Strategic Plan (CSP) which states under Strategy 2.1.3.3 *that an energy strategy is to be prepared for Council facilities and buildings by the Division of Planning and Environment*. Additional CSP strategies supporting the development of the Strategy and Implementation Plan include: 2.1 *Opportunities for use of renewable energy are increased* and 5.9 *Environmental sustainability is a priority*.

The Energy Strategy and Implementation Plan has been developed in four parts as outlined below:

Part 1: Background Paper (Chapter 2)

This section provides the overall context for the Energy Strategy and Implementation Plan and has been developed on behalf of Council by 100% Renewables, an expert energy consultant engaged under the NSW Office of Environment & Heritage's (OEH) Sustainability Advantage Program.

Part 2: Strategy (Chapter 3)

This section builds upon information provided in Part 1 and outlines Council's strategic vision, strategies and outcomes for energy management within Council controlled facilities and activities. It also seeks to outline ways in which Council will seek to support the local community in becoming energy smart.

Part 3: Implementation Plan (Chapter 4)

This section contains specific actions to be undertaken by Dubbo Regional Council to ensure the strategic outcomes in the Energy Strategy are addressed.

Part 4: Monitoring, Reporting and Review (Chapter 5)

This section contains specific information on how the Energy Strategy and Implementation Plan will be monitored, reported and reviewed.

2 Background Paper

2.1 The importance of energy conservation and renewable energy – the basics

2.1.1 Understanding energy

Energy is a vital input into running an organisation. Examples of energy are electricity and natural gas (stationary energy), or transport fuels like petrol, diesel, or LPG (transport energy). Energy can come from renewable, or non-renewable sources.

2.1.1.1 Fossil-fuel based/non-renewable energy

Currently, most of our energy consumption worldwide is supplied by fossil fuel energy sources, primarily oil, gas, and coal. Once fossil fuels are consumed, they cannot be replenished.

2.1.1.2 Renewable energy

Renewable energy is obtained from natural resources that can be continually replenished. The main sources of renewable energy are the sun, wind, water, geothermal (the earth's internal heat), and biomass (organic matter).

2.1.2 The impact of energy consumption on costs

Energy inputs are expensive, and organisations see this reflected on their electricity, gas and transport fuel bills. The higher the price an organisation pays for energy, the greater the value of being more energy efficient and switching to renewables.

Energy efficiency means to either perform the same activity with less energy input or accomplish more activity with the same amount of energy input. Either way, an organisation can achieve more with each unit of energy consumed. Examples of energy efficiency are lighting upgrades, or eco-driving.

Onsite renewable energy installations also have a large potential to reduce costs, but not every site will have ideal conditions for the rollout of solar PV or other onsite renewables.

2.1.3 The impact of fossil fuels on our environment

Burning fossil fuels releases the carbon that has been locked away in the Earth's crust for millions of years into the atmosphere, where it traps the sun's heat and contributes to climate change. Weather extremes already affect millions of people.

Climate change puts food, water, and agricultural supply chains at risk, is responsible for the mass extinction of many species, and causes many diseases to spread. It raises sea levels, potentially displacing millions of people. It increases the occurrence of heat waves, droughts, and changes in rainfall patterns. And with more and more fossil fuels being burnt, the threats to agriculture, vulnerable countries, and our entire society will get even worse.

According to the World Economic Forum's Global Risk Report 2019, extreme weather events, failure of climate change risk and mitigation, natural disasters, water crises, biodiversity loss and ecosystem collapse, and man-made environmental disasters like oil spills rank amongst the top worldwide risks.

2.2 What is considered best practice in energy management?

Council should look to reduce its energy and carbon footprint wherever feasible and cost-effective, so that the amount of energy that has to be sourced from renewables is reduced, with associated cost reductions. Following energy efficiency, the focus should be on the implementation of on-site renewables (including future opportunities that involve battery energy storage).

Offsite renewable energy generation, whether sourced from a Council-owned solar farm or via Council's energy sourcing strategy, are the third step in best-practice energy management. Step 3 in best-practice energy management will allow organisations to achieve ambitious targets.

The diagram below illustrates the staged approach Council can undertake.

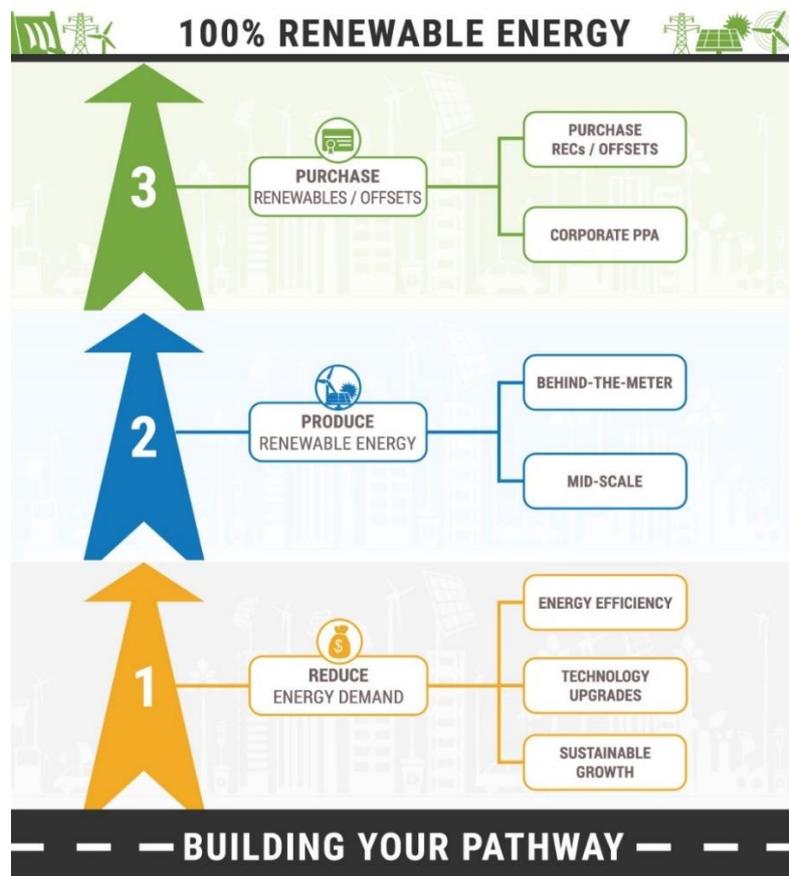


FIGURE 1- BEST PRACTICE IN ENERGY MANAGEMENT

2.3 International to local responses to energy management or conservation

2.3.1 Global context

To address climate change, signatory countries adopted the Paris Agreement at the COP21 in Paris on 12 December 2015. The Agreement entered into force less than a year later. In the agreement, signatory countries agreed to work to limit global temperature rise to well below 2°C, and given the grave risks, to strive for 1.5°C¹.



FIGURE 2: KEY ASPECTS OF THE PARIS CLIMATE AGREEMENT²

In October 2018, governments approved the wording of a special report on limiting global warming to 1.5°C. The report indicates that achieving this would require rapid, far-reaching and unprecedented changes in all aspects of society. With clear benefits to people and natural ecosystems, limiting global warming to 1.5°C compared to 2°C could go hand in hand with ensuring a more sustainable and equitable society³.

¹ Sourced from <https://www.un.org/sustainabledevelopment/climatechange/>

² Sourced from <https://www.connect4climate.org/infographics/paris-agreement-turning-point-climate-solution>

³ Sourced from https://www.ipcc.ch/news_and_events/pr_181008_P48_spm.shtml

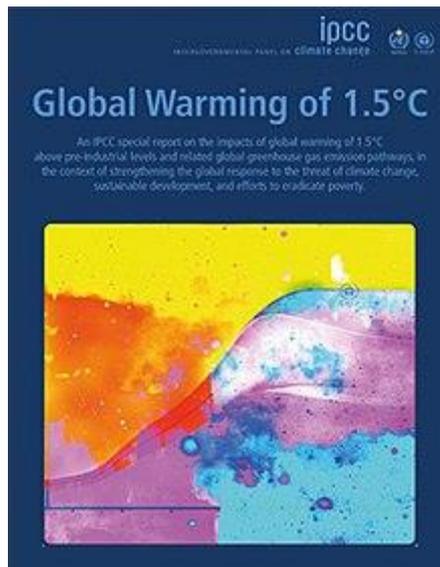


FIGURE 3: SPECIAL IPCC REPORT ON GLOBAL WARMING OF 1.5 °C (SR15)

2.3.2 National context

At a national level, Australia’s response to the Paris Agreement has been to set a goal for GHG emissions of 5% below 2000 levels by 2020 and GHG emissions that are 26% to 28% below 2005 levels by 2030. A major policy that currently underpins this is the Renewable Energy Target (RET)⁴. This commits Australia to source 20% of its electricity (33,000 GWh p.a., estimated to equate to a real 23% of electricity) from eligible renewable energy sources by 2020. The scheme runs to 2030. These two key targets are illustrated below.



FIGURE 4: AUSTRALIA’S RENEWABLE ENERGY AND CARBON GOALS

An added scheme underpinning Australia’s national targets is the Emissions Reduction Fund (ERF)⁵. This fund provides incentives to businesses, farmers, landfill operators, landholders and others to reduce GHG emissions. Projects are funded on an auction basis with proponents bidding for the lowest cost (incentives) required to abate GHG emissions. To date, six auctions have been held with the most recent being in December 2017.

⁴ <http://www.cleanenergyregulator.gov.au/RET>

⁵ <http://www.cleanenergyregulator.gov.au/ERF>

A proposed new policy initiative, the National Energy Guarantee (NEG)⁶ was developed during 2017 and 2018, aimed at ensuring reliability of supply at affordable costs to consumers while providing a pathway for emissions reduction to meet Australia's electricity sector targets. Following recent political uncertainty, this policy has been discontinued, and there are currently no significant announced measures beyond the RET and the ERF.

2.3.2.1 Energy management

As well as the RET the Commonwealth works to improve energy efficiency in collaboration with the States and Territories via the Council of Australian Governments (COAG)⁷. Major initiatives that are led by the Commonwealth and which can have impacts on energy use by DRC include:

- The Equipment Energy Efficiency (E3)⁸ program, through which Australian jurisdictions (and New Zealand) collaborate to deliver nationally consistent mandated energy efficiency standards and energy labelling for equipment and appliances. Procurement policies and practices that routinely ensure that high star-rated appliances (motors, air conditioning units, kitchen appliances) are selected when replacing or buying new equipment will help Council's energy footprint decline over time.
- Periodic review and update of the National Construction Code⁹ as it relates to efficiency (Section J). This section is currently undergoing a review, with proposed changes likely to come into effect in mid-2019. Both residential and commercial building changes will be targeted. The commercial building changes are aiming to target savings in buildings of 23-53%. Among other measures, the changes will target improvement of on-site renewable energy such as solar PV¹⁰. Any building upgrades or new facilities may need to comply with these requirements after mid-2019.
- Support for voluntary / market-based schemes such as Green Star and NABERS, and the implementation of the mandatory Commercial Building Disclosure¹¹ (CBD) program. The CBD Program is a regulatory program that requires energy efficiency information to be provided in most cases when commercial office space of 1000 square metres or more is offered for sale or lease. The CBD Program requires most sellers and lessors of office space of 1,000 square metres or more to have an up-to-date Building Energy Efficiency Certificate (BEEC), which includes a NABERS certificate and a CBD Tenancy Lighting Assessment (TLA) for the area of the building that is being sold, leased or subleased¹².

At a national level, the Commonwealth is also a periodic provider of programs, funds and incentives aimed at helping governments, homes and businesses become more energy efficient.

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<http://coagenergycouncil.gov.au/sites/prod.energycouncil/files/publications/documents/Final%20Detailed%20Design%20-%20National%20Energy%20Guarantee.pdf>

⁷ <https://www.coag.gov.au/>

⁸ <http://www.energyrating.gov.au/about>

⁹ <https://www.planning.nsw.gov.au/Policy-and-Legislation/Buildings/National-Construction-Code>

¹⁰ <http://www.abcb.gov.au/Connect/Articles/2017/03/09/Section-J-Overhaul-big-changes-are-coming-your-way>

¹¹ <http://cbd.gov.au/>

¹² <http://cbd.gov.au/get-and-use-a-rating/what-is-a-beec>

2.3.3 NSW State context

The NSW Climate Change Policy Framework¹³ outlines the State's target of reaching net-zero emissions by 2050. This is an aspirational objective and helps to set expectations about future GHG emissions pathways to help others to plan and act. The current policy framework will be reviewed in 2020.

Through the Government's Climate Change Fund (CCF) 2018-2022 Strategic Plan, a number of initiatives will be progressed in the next four year period with a total funding allocation of \$170 million. Implementation of programs is being led by the Division of Energy, Water and Portfolio Strategy (DEWPS) within the Department of Planning and Environment. The five major initiatives to be developed include:

1. supporting regional community energy projects and community energy hubs to give communities more control, avoid costly infrastructure upgrades and reduce rural energy costs.
2. supporting feasibility studies and commercialisation of emerging energy projects including pumped hydro generation and utility scale batteries, with potential co-funding from the Australian Renewable Energy Agency¹⁴, to bring forward private sector investment to support the next generation of energy and storage projects in NSW.
3. providing small incentives to coordinate assets such as home and electric vehicle storage to beat energy peaks and provide household demand response to the grid, as highlighted by Australian Energy Market Operator (AEMO)¹⁵ and the NSW Energy Security Taskforce as a key priority for system security.
4. supporting energy storage in state-owned sites, such as schools, to lower peak demand and potentially attract investment in local manufacturing.
5. increasing the energy savings for eligible recipients of the Low-Income Household Rebate¹⁶ by allowing them to opt out of the rebate and install a solar system on their roof, adding solar capacity to the grid and more than doubling the energy savings for the households involved.

The NSW Renewable Energy Action Plan¹⁷ has helped to drive the growth of renewables in the State through its three key goals:

- Goal 1 – Attract renewable energy investment
- Goal 2 – Build community support, including the establishment of the Renewable Energy Advocate
- Goal 3 – Attract and grow renewable energy expertise

2.3.3.1 Energy management

The NSW Government runs a number of initiatives aimed at promoting and increasing the uptake of energy efficiency and sustainable practices. Many of these initiatives are led by the NSW Department of Planning and Environment, and by the Office of Environment and Heritage within this Department. Initiatives that help local governments include:

¹³ <http://www.environment.nsw.gov.au/topics/climate-change/policy-framework>

¹⁴ <https://arena.gov.au/>

¹⁵ <http://www.aemo.com.au/>

¹⁶ <https://www.service.nsw.gov.au/transaction/apply-low-income-household-rebate-retail-customers>

¹⁷ <https://energy.nsw.gov.au/renewables/renewable-energyoffers/renewable-energy-action-plan>

- Sustainability Advantage program, which helps local governments commit to, plan, implement and be recognised for sustainability practices in their operations and supply chains (DRC is a member of this program)
- Energy Savings Scheme, providing information and resources that help organisations get access to financial incentives by implementing verifiable energy savings initiatives, such as building retrofits, plant upgrades and lighting upgrades to LED
- In 2018 the government completed a panel of renewable energy Power Purchase Agreement (PPA) providers, which local governments can access to implement onsite solar PV solutions. The advantage of an onsite PPA is that the solar PV can be installed and deliver cost savings from renewables at no upfront cost. However, paying for a solar PV system utilising private capital will result in greater cost savings. This initiative is useful where access to capital is not available or is limited
- Community renewable energy guides and resources e.g. <http://c4ce.net.au/>
- A wide range of tools, guides, case studies, training courses and other materials is available to businesses through OEH, covering a wide range of sectors, technology types and energy forms
- Environmental Upgrade Agreements (EUA), which can help organisations and participating Councils overcome some traditional barriers to implementing and benefitting from environmental upgrades
- Clean Energy for Business case studies, developed as a result of the 2017 program, assisting businesses and local governments plan for a net-zero/100% renewable energy future.

2.3.4 Regional trends

Regional NSW provides national leadership on renewables through local action. Notable examples include:

- Narrabri LGA has a solar PV penetration rate of 41.8% of dwellings (the NSW average is 21%)
- Lismore City Council has a goal to self-generate 100% of its electricity needs from renewables by 2023, and a plan to achieve this was adopted by Council in 2014.
- Coffs Harbour City Council has a goal to source 100% of electricity from renewables by 2030, with interim targets for 2020 and 2025, and a 50% GHG emissions reduction target by 2025. The Renewable Energy and Emissions Reduction Plan was adopted by Council in 2015.
- Byron Shire is aiming to reach a “net zero emissions” target, and Byron Bay Council is a signatory to the Global Compact of Mayors.
- Uralla is aiming to be a zero net energy town (ZNET), through the use of energy efficiency, renewables and storage. A 7-10 year timeframe was anticipated for the ZNET target to be achieved when the project was announced in 2014.
- Tweed Shire Council has set a goal to meet 50% renewables for its operations by 2025 and recently committed to more than 1,300 kWp of solar installations through 2019
- Tyalgum is aiming to be a 100% renewable energy town and to potentially be ‘off-grid’
- The City of Broken Hill has a commitment to achieve 100% renewable status by 2030.

These and other commitments are illustrated below, clearly highlighting the leadership position occupied by local governments in NSW.



FIGURE 5: NSW LOCAL COUNCILS AND COMMUNITIES – AMBITIOUS RE AND GHG GOALS

Many local governments have also signed up to the Cities Power Partnership program (CPP) run by the Climate Council. CPP is Australia’s largest local government climate network, made up over 100 councils from across the country. Local councils who join the partnership make five action pledges in either renewable energy, efficiency, transport or working in partnership to tackle climate change.

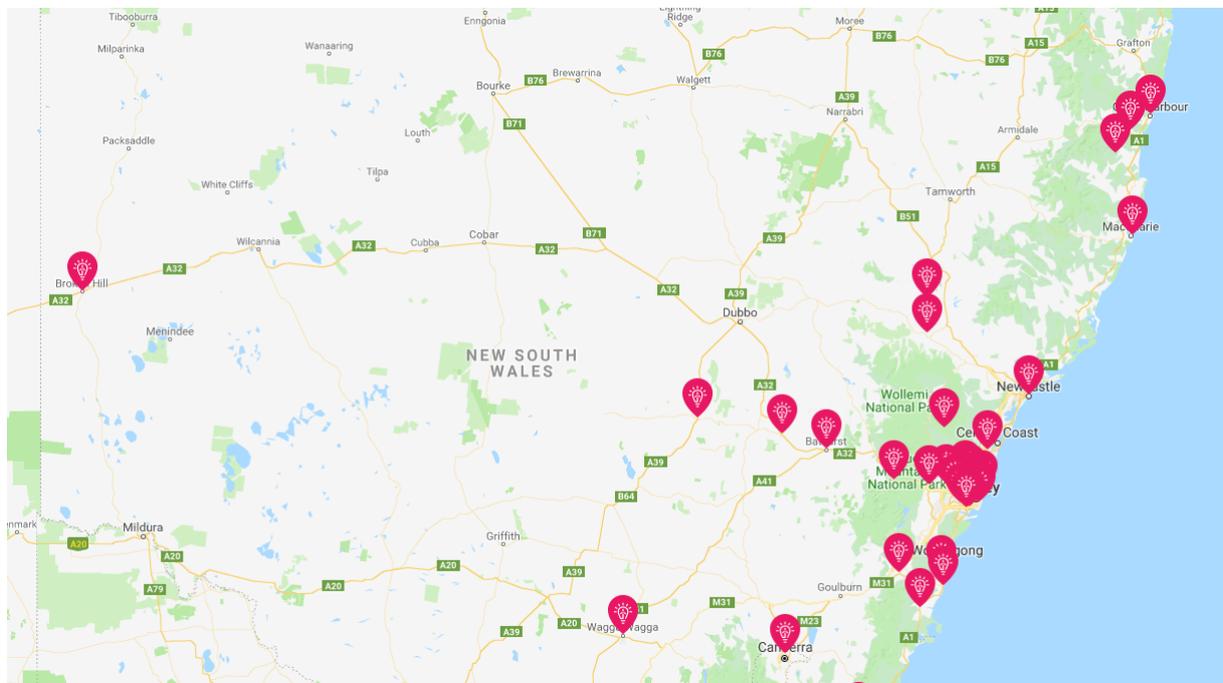


FIGURE 6: COUNCILS THAT ARE MEMBERS OF THE CITIES POWER PARTNERSHIP PROGRAM

Example member councils are Parkes, Orange, Bathurst, Wagga Wagga, Muswellbrook, Upper Hunter Shire and Broken Hill.

2.3.5 Examples of how other councils have implemented energy management

2.3.5.1 Tamworth Regional Council

The council sets its energy direction within its Sustainability Strategy 2017 – 2021¹⁸. The Strategy identifies seven focus areas for energy management within Council and measures success through the number of energy efficiency and renewable energy projects implemented, the operation of an energy management system, and the engagement of the community in energy.

The council also refers to UN Sustainable Development *Goal 7 Affordable and Clean Energy* in setting its aspirational target, as can be seen in Figure 7. They also set a direction for carbon emissions within the strategy which includes the additional UN SD Goal of *11 Sustainable Cities and Communities*.

Dubbo Regional Council also refers to the UN Sustainable Development Goals (SDGs) within its Community Strategic Plan and may choose to consider the inclusion of the SDGs in their energy/carbon strategy.



FIGURE 7: TAMWORTH REGIONAL COUNCIL'S SUSTAINABILITY STRATEGY

2.3.5.2 Albury City Council

Albury City Council has an Energy management framework¹⁹ including three pillars - energy performance monitoring, energy savings measures and detailed energy assessment. Their Energy Savings Action Plan sets out the measures council is taking to implement the framework.

The council reviews and updates the four-year plan each year, based on the results of ongoing energy assessments and audits. Council's Community Strategic Plan Albury 2030 provides a number

¹⁸<http://www.tamworth.nsw.gov.au/Environment/Environment--Sustainability-and-Climate-Change/Sustainability-Strategy>

¹⁹<https://www.alburycity.nsw.gov.au/environment-and-waste/sustainability/energy-management>

of outcomes relating to sustainability and energy which commits the council to develop the energy savings action plan²⁰ (ESAP) and a carbon management strategy²¹ (see page 1 of ESAP).

The ESAP is 'savings'-focused as opposed to carbon emissions-focused with a number of economic assessments being completed to inform the plan including a review of tariffs, available solar technology, energy audits, and others.

The council has joined the Cities Power Partnership program.

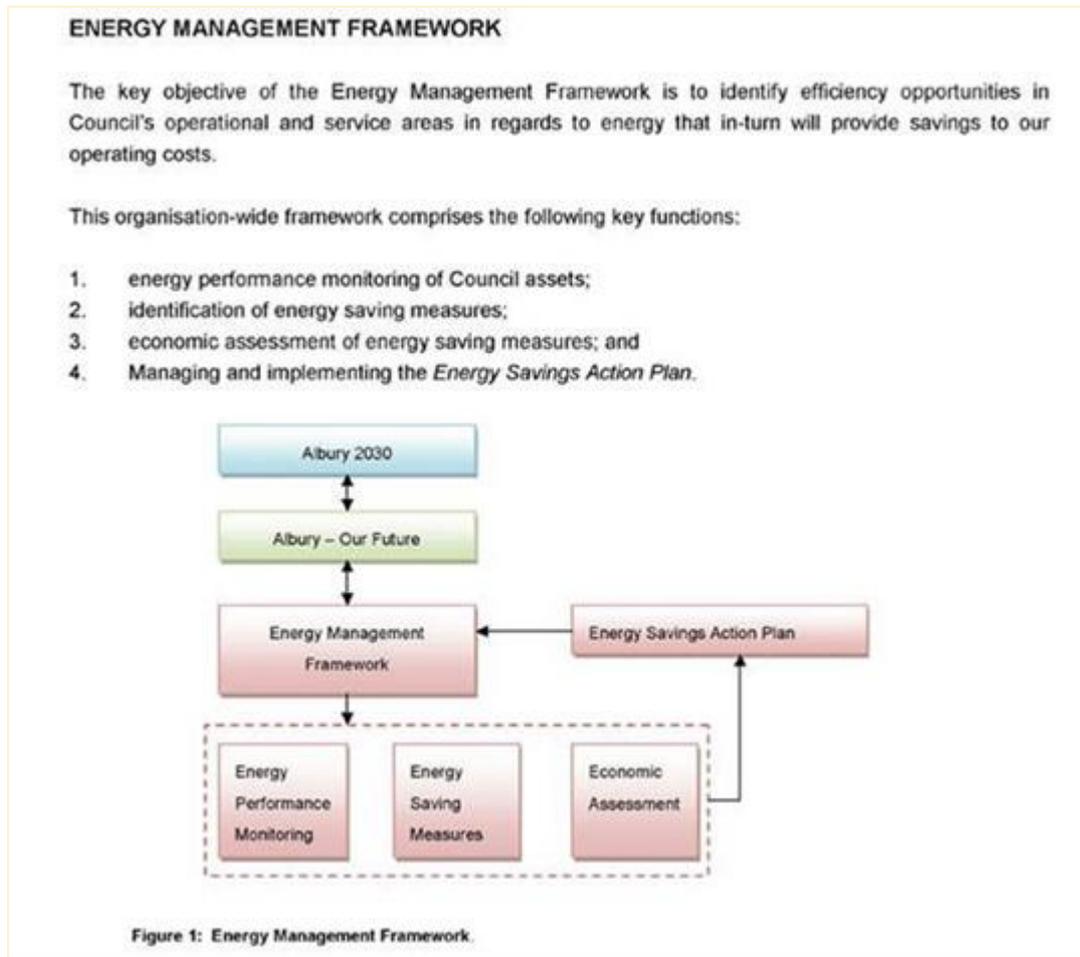


FIGURE 8: ALBURY CITY COUNCIL'S ENERGY MANAGEMENT FRAMEWORK

2.3.5.3 Bathurst Regional Council

In 2012, Bathurst Regional Council developed a Distributed Energy Plan²² which looked at how the council could reduce energy consumption and save money at the main energy consuming facilities. Council has been working on implementing suggested actions from this Plan and has installed a 100 kW system in 2016 to provide around 5% of the energy required to run the council's Waste Water Treatment Plant (WWTP).

²⁰ <https://www.alburycity.nsw.gov.au/environment-and-waste/sustainability/energy-management>

²¹ <https://www.alburycity.nsw.gov.au/environment-and-waste/sustainability/climate-resilience-and-adaptation/making-albury-resilient-to-climate-change>

²² <https://www.bathurst.nsw.gov.au/environment/energy-sustainability/solar-power-on-council-buildings.html>

This will reduce the council's annual emissions by around 140 tonnes of GHG emissions. The Bathurst 2040 CSP outlines in Strategy 3.3 that the council will seek to minimise the city's environmental footprint, live more sustainably and use resources more wisely.

There doesn't seem to be an updated energy plan, but the council has joined the Cities Power Partnership Agreement which is assisting councils to achieve this goal. *Strategy 3.5 Increase resilience to natural hazards and climate change* lists that a Climate Change and Adaptation Plan will be developed by the Council. The council has also joined the Cities Power Partnership program.



FIGURE 9: BATHURST REGIONAL COUNCIL'S STRATEGY 3.3 OF ITS CSP

2.3.5.4 Orange City Council

Orange City Council has a Community Strategic Plan 2018-28 with strategic objectives similar to that of Dubbo Regional Council including 7.2. *Ensure best practice use of renewable energy options for Council and community projects* and 8.2. *Develop and promote initiatives to reduce water, energy and waste in consultation with the community.*

In 2012, the council developed a distributed energy plan. The council currently has no specific energy strategy but has a focus on completing energy audits and installing solar PV systems on the council's assets. The council has also joined the Cities Power Partnership to help investigate opportunities within its Delivery Plan.

2.3.6 Dubbo region

The Dubbo Regional Council Local Government Area is one of Australia’s leading LGAs in terms of the uptake of solar hot water and solar PV systems. According to data sourced from the Australian Photovoltaic Institute (APVI), DRC LGA has:

- 6,579 PV installations, a 31.2% penetration rate, at February 2019, with over 43 MW of installed capacity. Refer to the APVI map with DRC LGA details highlighted below
- 310 installations over 10 kW, 4 installations over 100 kW, and 6,263 installations of less than 10 kW.

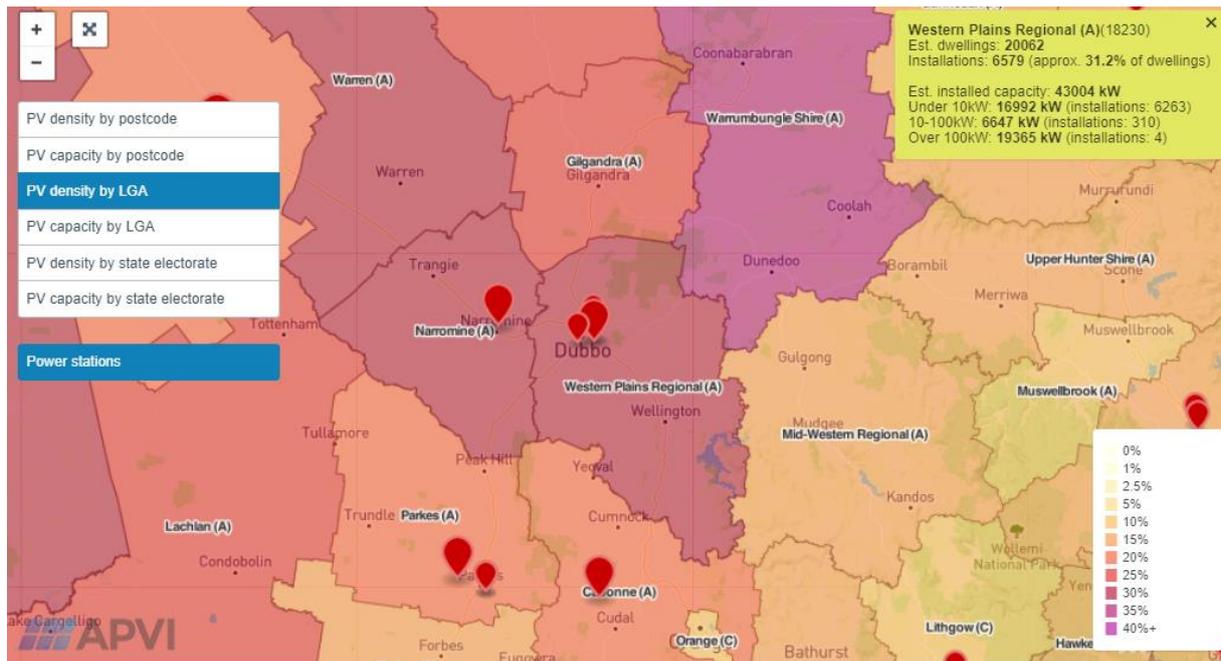


FIGURE 10: DUBBO REGIONAL LGA SOLAR PV INSTALLATIONS, FEBRUARY 2019

By comparison, Mid-Western Regional LGA, only has a 18.2% uptake, whereas Narromine has a higher uptake at 34.3%. The NSW average is about 20%.

In terms of large-scale solar developments, there is the 18 MW South Keswick solar farm located in Dubbo. The Zoo also installed a solar farm close to 1 MW on their premises. Pivotel Satellite installed a 200 kW system.

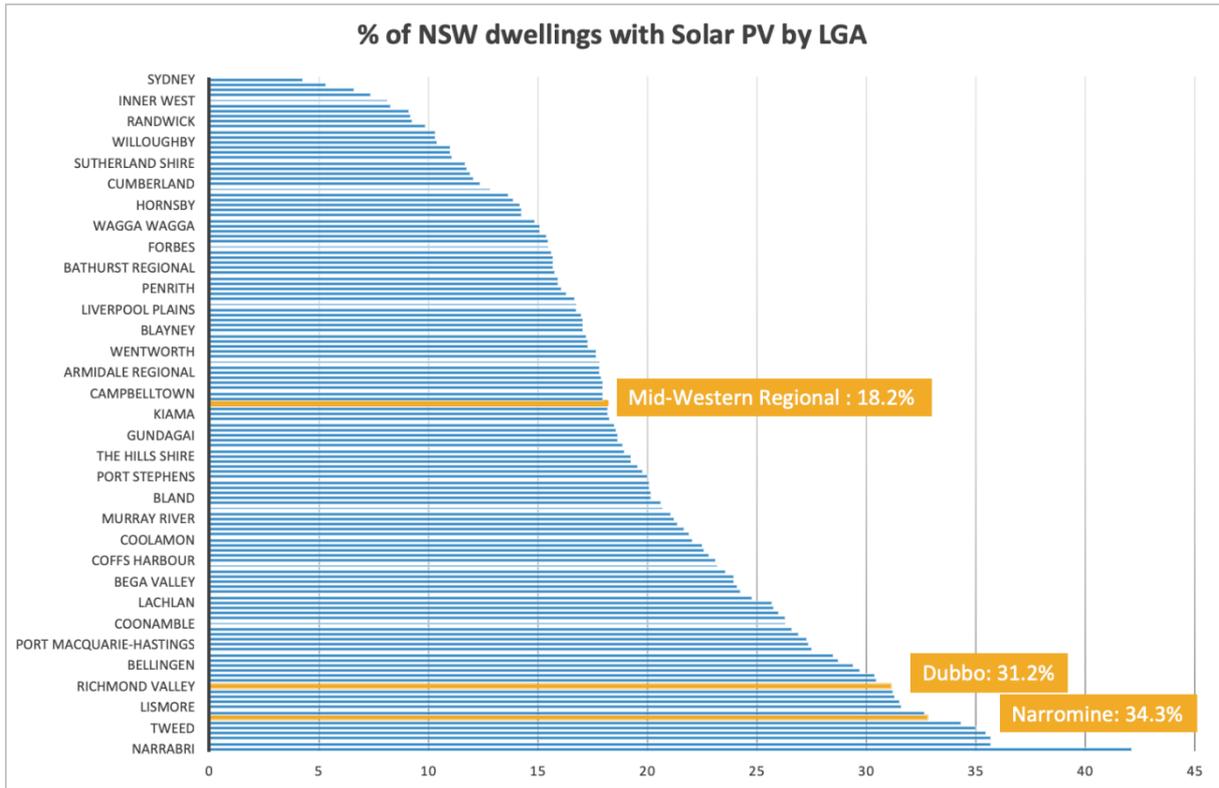


FIGURE 11: DUBBO REGIONAL LGA PERCENTAGE SOLAR PENETRATION

In addition to the high solar uptake, there is also the 113.2 MW Bodangora wind farm owned by Infigen in Wellington. Infigen has committed to contributing \$50,000 to the Bodangora Community Foundation each year for the first 25 years of the operation of the wind farm.



FIGURE 12: BODANGORA WIND FARM IN WELLINGTON

2.4 Council's response so far to managing energy

2.4.1 Previous studies and plans

There are a number of previous studies and plans that have been developed for DRC.

2.4.1.1 2014 Energy Strategy and Implementation Plan for Dubbo City Council

The Strategy and Plan identified a Strategic Vision and three key strategic areas of energy management for Council controlled facilities and activities. The three areas included energy efficiency, renewable energy, and transport.

The Strategic Vision stated that *"Dubbo City Council is a leader in regional New South Wales in the reduction of energy consumption, increased energy efficiency and the continued adaptation to and use of renewable energy"*. The Strategy and Implementation Plan drew from the opportunities and recommendations of the *2012 Distributed Energy Plan* as well as objectives from the *2010 Energy Strategy and Dubbo ALIVE 2009-2013*. The strategy also supported Council in meeting its obligations identified in *Dubbo 2036* and *Dubbo ALIVE*.

2.4.1.2 2012 Distributed Energy Plan for Dubbo City Council

This plan was developed by Arup Pty Ltd as part of a joint Bathurst Orange Dubbo Alliance grant project. It was designed to deliver significant financial and environmental benefits through the reduction of energy usage and substitution of coal-fired electricity with lower carbon and potentially locally-generated alternatives.

It was designed to provide Council's leadership with an Energy Strategy for the next ten years. The Plan identified ten facilities operated by Dubbo City Council in which distributed energy generation, and energy-efficiency options were applicable. The facilities included Apex Oval, Dubbo Aquatic and Leisure Centre, Civic Administration Building, Works Depot, Dubbo Regional Airport, Dubbo City Holiday Park, Macquarie Regional Library, Showground, Dubbo Regional Theatre and Convention Centre and Western Plains Cultural Centre.

2.4.1.3 2012 Distributed Energy Plan for Central NSW Councils

This plan was developed by Arup Pty Ltd as part of a joint Bathurst Orange Dubbo Alliance grant project. It was designed to identify potential opportunities requiring regional collaboration. Potential opportunities identified included the establishment of a single centralised plant processing waste from throughout the region to energy; bulk purchasing and procurement of common technology recommendations such as solar PV and lighting; a regional design panel of experts to assist in reviewing facility upgrades or new building design; and creating a role to coordinate investigation into street lighting upgrades. Since 2012 the Central NSW Joint Organisation (previously CENTROC) has proceeded with a number of these recommendations on behalf of its member councils, including the expert panel and street lighting investigations. Unfortunately Dubbo Regional Council, despite being a partner in the initial grant project, has not been included in these projects post 2012 as it is not a member council.

2.4.1.4 Dubbo ALIVE 2009-2013

Dubbo ALIVE identified two key Energy Strategy targets. The first target was to ensure that a minimum of 2% of Council's electricity consumption comes from renewable sources of energy by 2013; the other was that Council reduced energy consumption by 5% on 2004/2005 baseline levels.

Council's energy consumption initially trended downwards from the 2004/2005 baseline towards the 2012/2013 target, but a number of issues including seasonal variation and growth in different areas resulted in an overall increase in energy consumption.

2.4.2 Previous and current energy initiatives

2.4.2.1 Energy efficiency initiatives

DRC has implemented a number of initiatives to reduce energy demand and cost, primarily focused on energy efficiency as part of normal business operations.

In particular Council's Energy Fund, established in 2014, has assisted facility managers to implement energy efficiency measures, save money and reduce Council's carbon footprint. Since 2014 \$100,000 has been allocated to the Fund and the eight projects implemented, mostly lighting upgrades, are estimated to be saving Council at least \$50,000 per year in electricity and maintenance costs.

Implemented projects include:

- LED lighting upgrade at Dubbo Showground Expo Pavilion (2017/18)
- LED lighting upgrade at Old Dubbo Gaol (2017/18)
- LED lighting upgrade at Dubbo Regional Livestock Markets - saleyards (2016/17)
- LED lighting upgrade at Rainbow Cottage Childcare Centre (2015/16)
- Solar lighting at Dubbo Animal Shelter (2015/16)
- LED lighting upgrade at Hawthorne Street Depot (2015/16)
- LED lighting upgrade at Macquarie Regional Library (2014/15)
- LED lighting upgrade at Dubbo Regional Airport (2014/15)

In February 2019 the Council Energy Fund was awarded to the Hawthorne Street Depot for the installation of a 20kW solar PV system and to the Dubbo Regional Livestock Markets (saleyards) for further LED lighting upgrades.

Other initiatives include multiple energy audits conducted across a range of council sites, from which improvements in energy efficiency and renewable energy installations are proposed. Suggested improvements include lighting upgrades such as those mentioned above, HVAC upgrades/replacements and hot water upgrades/replacements. Facility managers are responsible for the implementation of any suggested improvements unless separate funding is sourced (e.g. Council Energy Fund).

2.4.2.2 Renewable energy initiatives

- 15 Solar installations across council including
 - 70 kW solar installation at Western Plains Cultural Centre in 2012
 - 12 kW solar installation at Barden ParkTogether, these installations amount to 1% of Council's electricity being sourced from renewable energy.
- NRMA and Tesla EV charging stations to be installed at Western Plains Cultural Centre in 2019

2.4.3 Council's energy use snapshot

2.4.3.1 Council's operating assets

DRC has approximately 52 active building electricity accounts, 2 public street lighting accounts, and 107 water and sewer services accounts.

The sites owned by Council vary widely by function and energy demand.

- Water treatment and pumping, sewer pumping and wastewater treatment sites, consume 70% of Council's electricity that is not public street lighting and 58% of overall electricity.
- Buildings vary from public facilities such as community centres and libraries, public amenities and BBQs, parks and ovals, essential services such as Rural Fire Service and SES facilities, and Council operations facilities such as depots and administration buildings. Of these the Dubbo Regional Airport is the largest user of electricity followed by the Civic Administration Building, both located in Dubbo.

2.4.3.2 Energy baseline

IN FY17/18, DRC's sites consumed 19,170 MWh. In addition, streetlighting energy consumption was 3,972 MWh. Council's energy consumption is dominated by water and sewer assets (58%) followed by Council buildings (25%). Street lighting is responsible for 17% of energy consumption. Additionally, Council consumes 5,225 GJ of natural gas, 662.3 GJ of bottled gas, 36,808 GJ of diesel for fleet, 2,607 GJ of petrol for fleet and 152 GJ of ethanol from E10 for fleet.

Electricity Use for 2017/2018 financial year

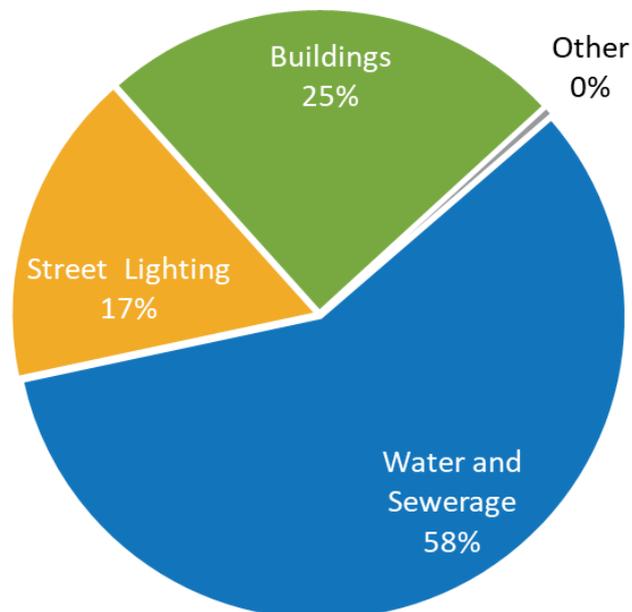


FIGURE 13: DRC'S ENERGY BREAKUP BY ASSET CATEGORY

Estimates of end use of energy at both a category and technology level as shown below.

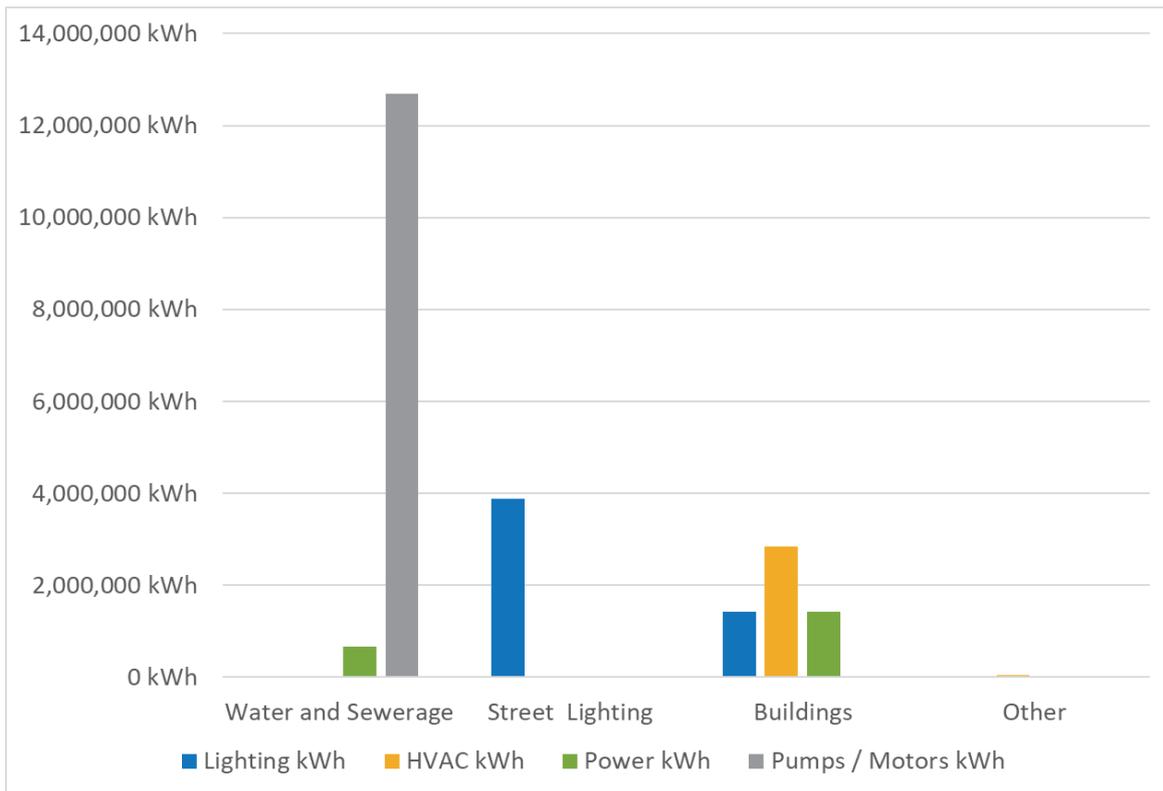


FIGURE 14: DRC'S ENERGY END-USE BY EQUIPMENT TYPE

This analysis demonstrates that electric motors associated with water and wastewater pumping equipment, and street lighting, are the major energy end uses in DRC. In buildings, there is a more disaggregated consumption profile with lighting and air conditioning being the major energy users.

We can look at energy at a sub-category level as well within each major category, as shown below.

TABLE 1: ENERGY CONSUMPTION AT A SUB-CATEGORY LEVEL

Asset Categories	Annual Electricity kWh	Annual Usage %
Water and Sewerage	13,366,312 kWh	58.01%
Water Filtration Plant	6,288,479 kWh	27.29%
Sewerage Treatment Plant	2,479,012 kWh	10.76%
Irrigation or Pump	4,598,821 kWh	19.96%
Street Lighting	3,871,914 kWh	16.80%
Public Lighting	3,871,914 kWh	16.80%
Buildings	5,695,423 kWh	24.72%
Airport	826,671 kWh	3.59%
Civic Administration Building	577,914 kWh	2.51%
Convention Centre	498,431 kWh	2.16%
Cultural Centre	549,112 kWh	2.38%
Saleyard	402,321 kWh	1.75%
Fire Shed	14,639 kWh	0.06%
Lighting	191,318 kWh	0.83%
Pool	404,225 kWh	1.75%
Other Buildings	2,230,792 kWh	9.68%
Other	108,482 kWh	0.47%
BBQ	2,182 kWh	0.01%
CCTV	1,093 kWh	0.00%
Communications	19,191 kWh	0.08%
Radio	375 kWh	0.00%
Other Sites	85,641 kWh	0.37%
NA	3,655 kWh	0.12%
Grand Total	23,042,131 kWh	100.00%

This provides a base against which opportunities for energy efficiency and solar PV can be assessed.

Figure 15 provides a visual representation of the above table.

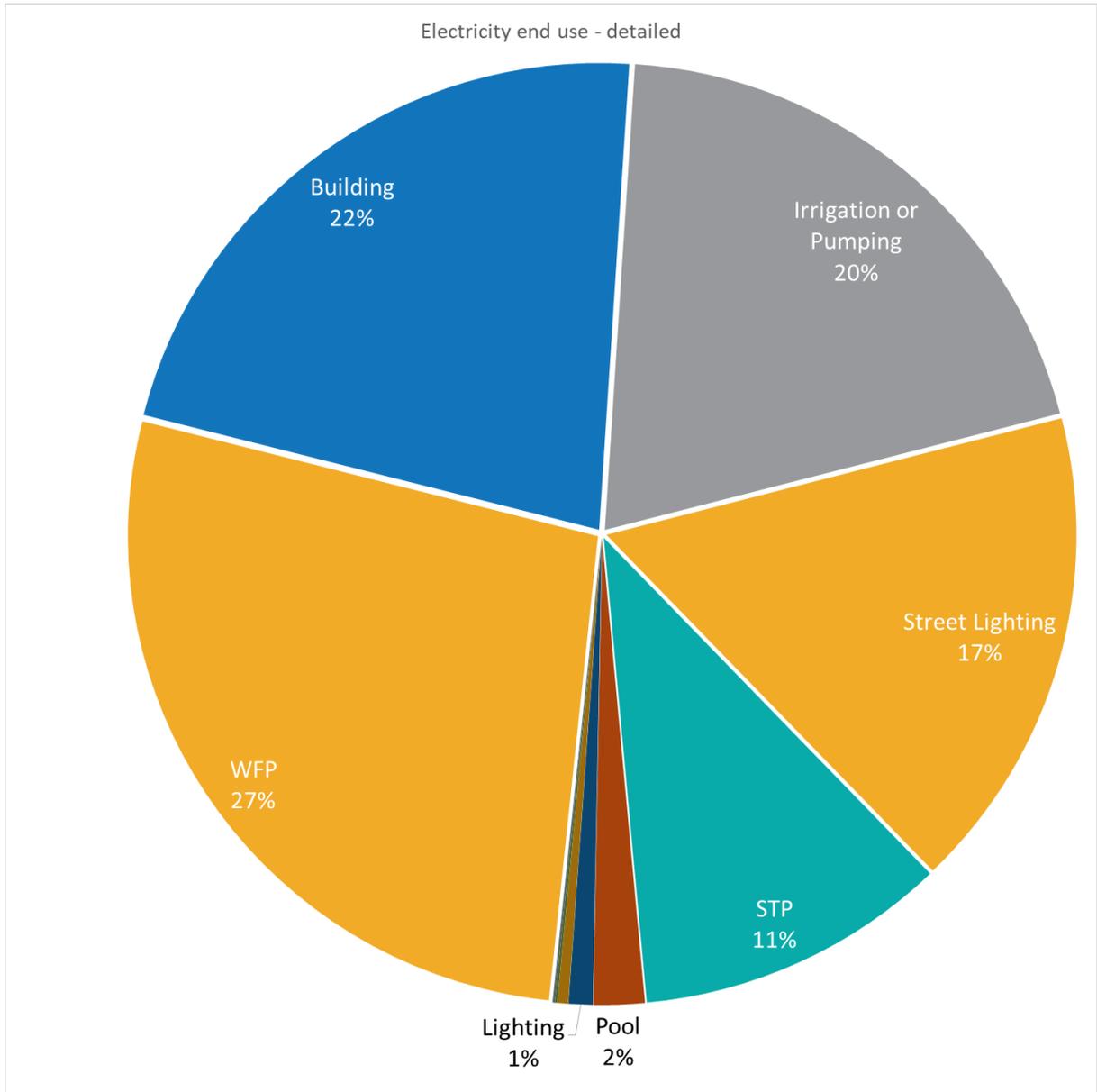


FIGURE 15: DETAILED BREAKDOWN OF ELECTRICITY END USE FOR DRC

2.4.4 Council's carbon emissions snapshot

Carbon emissions are analysed because in best practice energy management, Councils will often have a carbon emissions goal, possibly in addition to renewable energy goals.

In FY17/18, DRC's carbon footprint was 24,504.73 tonnes of greenhouse gas emissions. Table 2 shows the details of the carbon footprint.

TABLE 2: CARBON FOOTPRINT FOR FY17/18 IN TONNES OF CO₂-E

EMISSION SOURCE	ACTIVITY DATA	UNITS	SCOPE 1	SCOPE 2	SCOPE 3	TOTAL T CO ₂ -E	%
Diesel for fleet	953.58	kL	2,595.35		132.51	2,727.86	11.13%
Petrol for fleet	76.07	kL	175.92		9.37	185.28	0.76%
Ethanol for fleet	6.51	kL	0.06		-	0.06	0.00%
Biodiesel	7.57	kL	0.68		-	0.68	0.00%
Natural Gas	5,225.00	GJ	269.24		71.06	340.30	1.39%
Bottled gas	25,770.00	L	40.13		2.38	42.52	0.17%
Electricity use Council assets	19,170,217.00	kWh		15,719.58	1,917.02	17,636.60	71.97%
Electricity use Streetlighting	3,871,914.00	kWh			3,562.16	3,562.16	14.54%
Paper consumption	7,132.50	kg			9.27	9.27	0.04%
TOTAL:			3,081.38	15,719.58	5,703.77	24,504.73	100.00%

The following graphics show the carbon footprint by emission scope (1, 2, or 3) and source.

Electricity consumption is the highest emissions source. Combining both streetlighting and council assets makes up 87% of the carbon footprint, followed by diesel for fleet, which makes up 11%. Petrol and LPG consumption and their associated carbon footprint is low, as well as paper consumption.

Landfill gases and emissions related to wastewater treatment have been omitted from this carbon footprint as the focus of this background paper is on energy management.

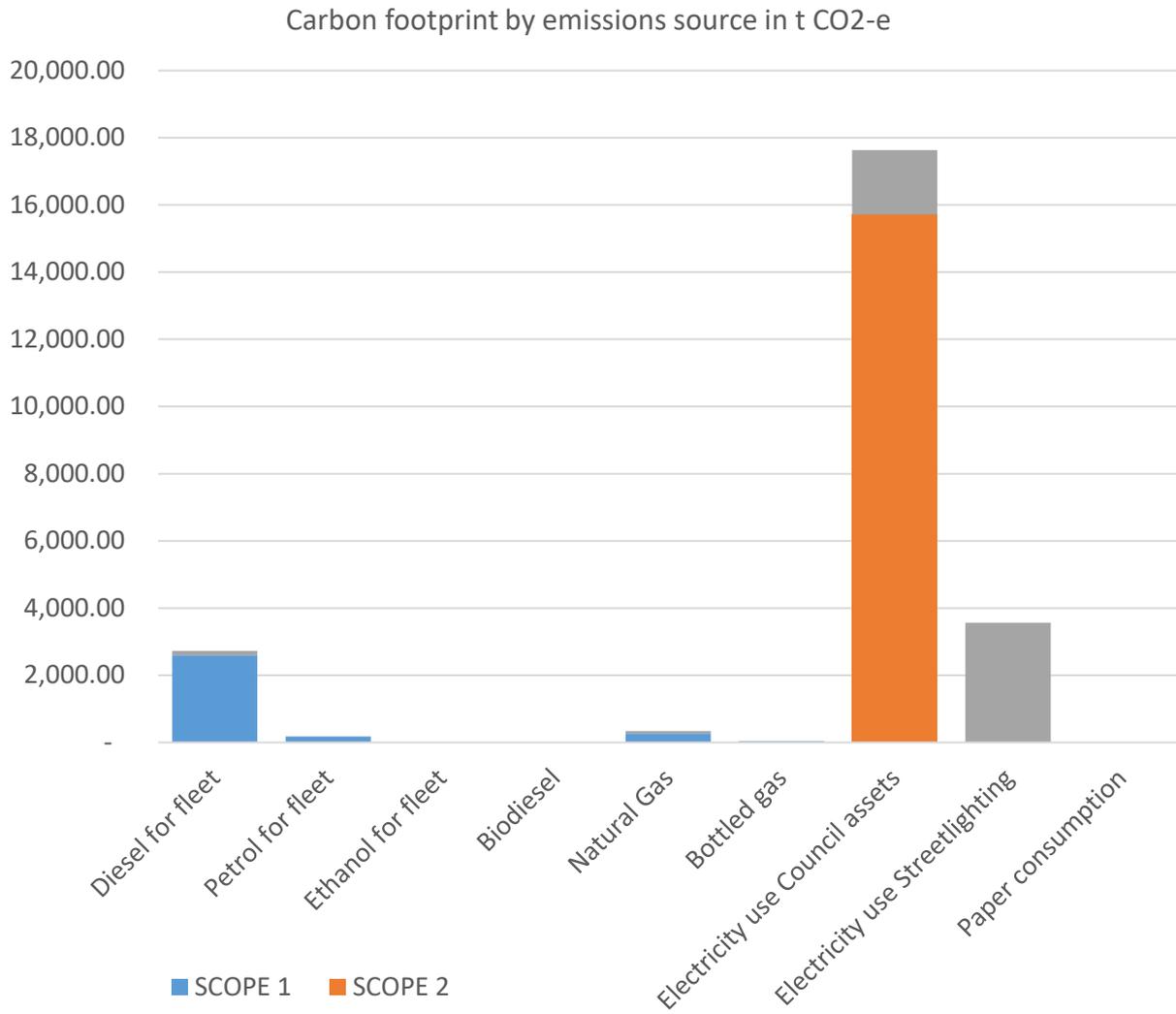


FIGURE 16: CARBON FOOTPRINT BY EMISSION SOURCE AND SCOPE

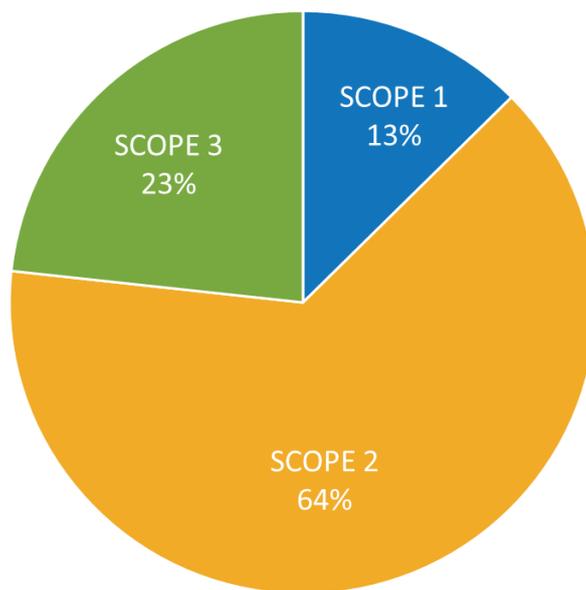


FIGURE 17: CARBON FOOTPRINT BY SCOPE CONTRIBUTION

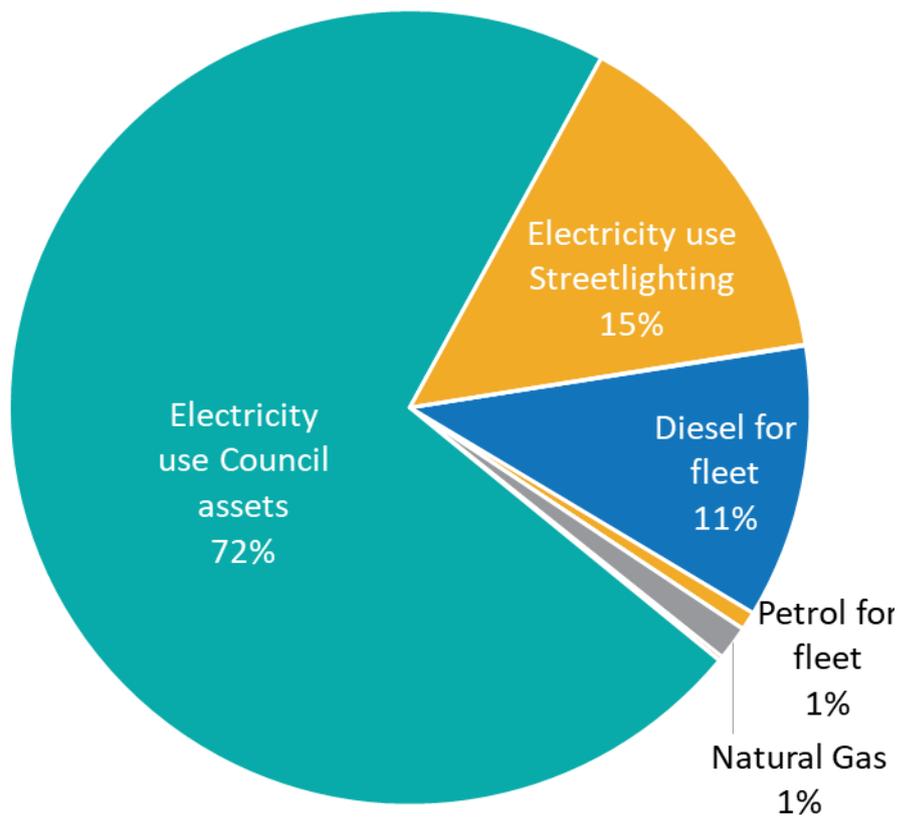


FIGURE 18: PERCENTAGE CONTRIBUTION OF EMISSION SOURCES TO THE CARBON FOOTPRINT

2.5 What's happening in the future - trends Council should know about

2.5.1 Electricity

Any business case for renewable energy needs to be assessed within the context of available pricing of non-renewable or standard grid power rates. Notwithstanding the environmental and other benefits gained, for a business case to be viable it should make financial sense for decision makers.

The electricity market in 2017 and 2018 saw significant volatility and unprecedented high pricing, with many of the price drivers continuing to influence power costs in the coming years. Figure 19 illustrates a possible price trajectory based on ASX futures and our current forecast of the wholesale electricity market.

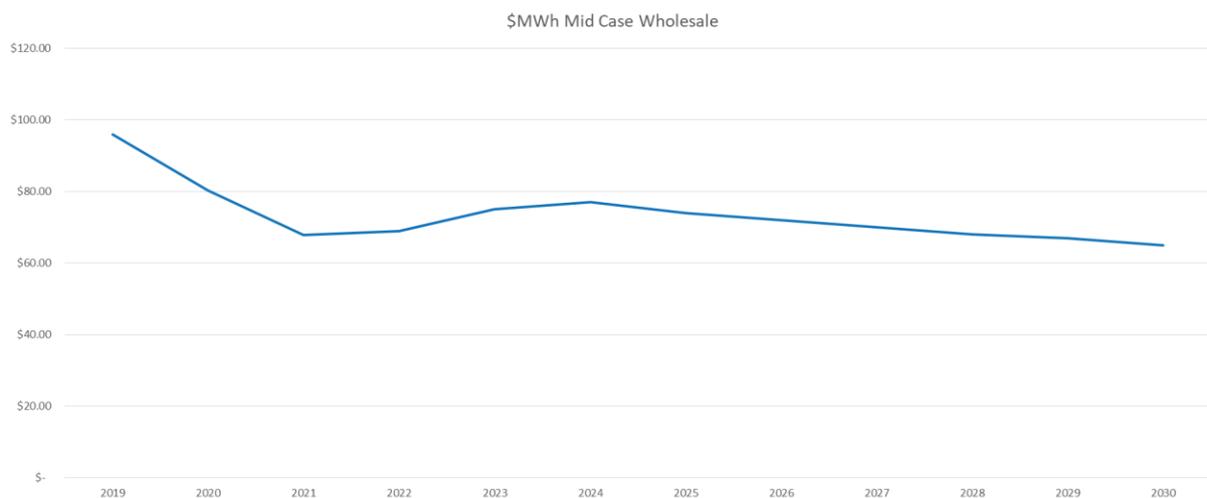


FIGURE 19: ELECTRICITY PRICE FORECAST

The cost of renewable energy technology is declining and for the first time in the NSW market, there appears to be a consistent price differential favouring renewable energy over standard grid power.

2.5.2 Natural gas

As can be seen in Figure 20, wholesale natural gas prices have increased over the last ten years. With distribution charges and retailer margin gas prices can range from \$15 to \$25/GJ.

Domestic gas prices have approached parity with world prices as Australia has become a gas exporter through its LNG projects on the East coast.

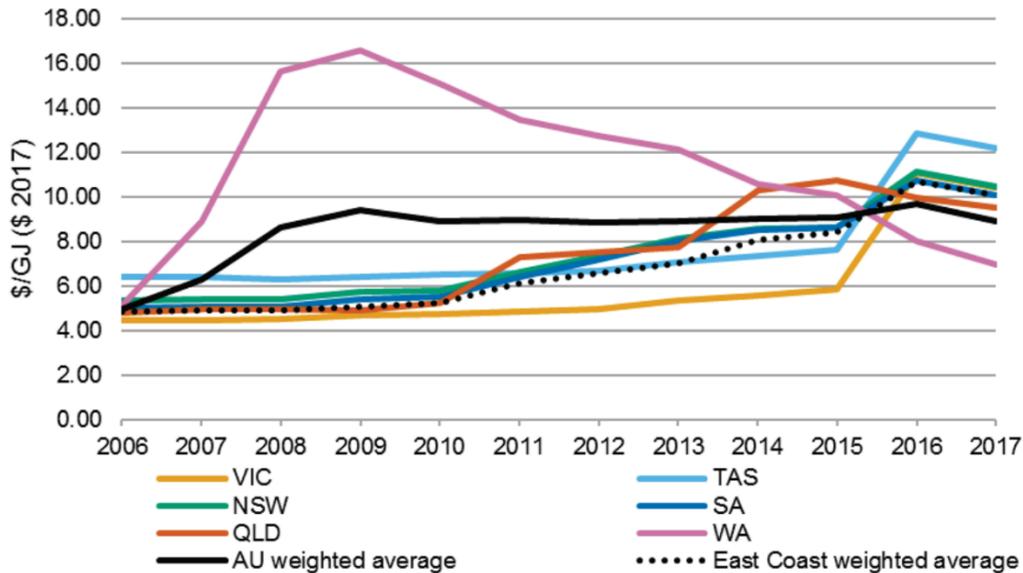


FIGURE 20: HISTORICAL WHOLESALE GAS PRICES IN AUSTRALIA

Rising gas price trends and potential tempering of electricity prices may make electrification one of Council’s abatement strategies going forward. Note however the downward trend in Western Australian (WA) gas prices, which may be the result of domestic gas reservation policies in WA.

2.5.3 Transport

2.5.3.1 Electric vehicles

Electric Vehicles (EVs) generate no CO₂ emissions directly from their operations, however they cannot be considered zero emission vehicles unless their batteries are charged from renewable energy sources. In Australia, electricity from the grid varies in emissions intensity depending upon which state the electricity is sourced from. This is an important consideration when comparing electric vehicles with conventional internal combustion engine vehicles.

Figure 21 compares the emissions per km of the top 10 selling internal combustion engines (ICE) vehicles, hybrids (with ICE) and electric vehicles that are charged from the grid in different States. The figure shows that:

- ▶ On average electric vehicles have lower emissions than the average or typical internal combustion engine vehicle however not by a significant amount
- ▶ States with a higher renewable energy uptake will result in lower emissions per km for electric vehicles
- ▶ If electric vehicles are charged from solar panels directly, or from the grid with all of council’s electricity sourced from renewables, then the emissions per km will be zero.

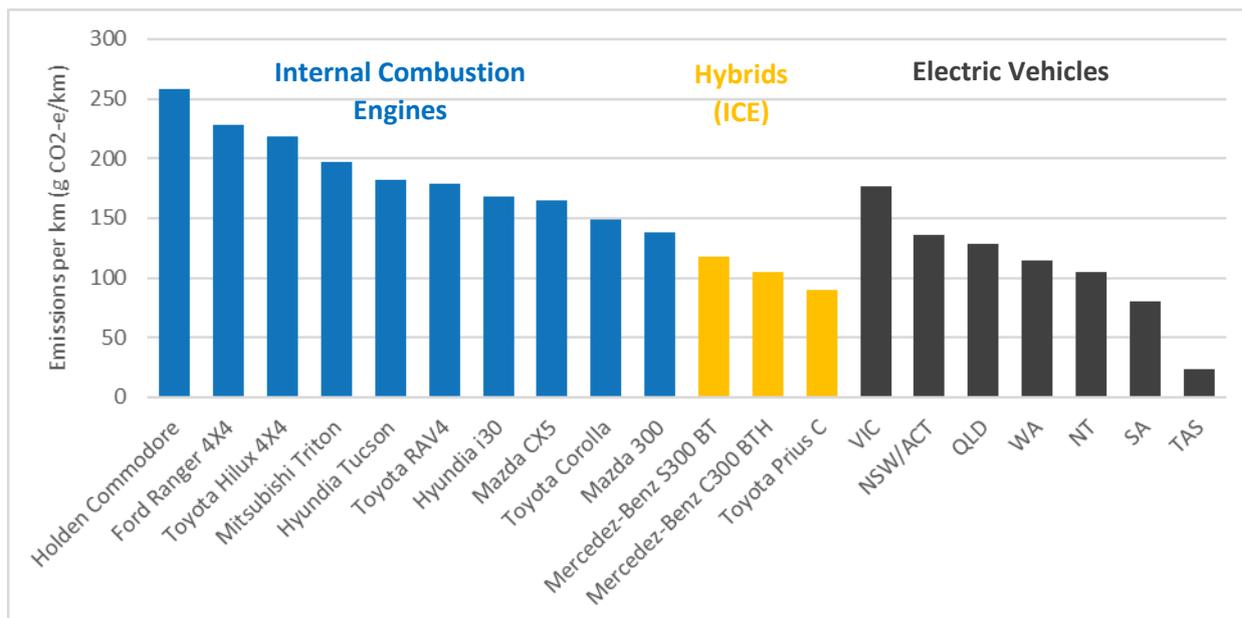


FIGURE 21: COMPARISON OF EMISSIONS PER KILOMETRE FROM MOTOR VEHICLES IN AUSTRALIA²³

From a cost perspective, electric vehicles are still more expensive than conventional internal combustion engine vehicles however this gap is gradually getting smaller. As more companies develop and compete in the manufacture of electric vehicles, costs will continue to decline. Furthermore, electric vehicles have fewer moving parts when compared to internal combustion engine vehicles thus resulting in lower maintenance costs.

Currently electric vehicles do not have the flexibility that ICE vehicles have when travelling long distances as they have a lower range and lack the infrastructure for charging stations. However steps are being taken to develop a charging infrastructure in Australia, which will remove this limitation. The NRMA is rolling out a regional fast-charge network²⁴ involving \$10m to build 40 EV charging stations in regional locations in NSW and the ACT, in order to build a network allowing drivers to travel long distances.

The NRMA is also calling for governments across Australia to adopt EVs more widely, including 10% targets by 2021 and 25% by 2026²⁵.

More substantially, the ACT Government²⁶ recently announced plans for the ACT passenger fleet to be EV by 2021 via the *Transition to Zero Emissions Vehicles Action Plan 2018-2021*.

As most of Council's fuel is probably consumed by trucks, there is also an interest in electric vehicle developments in this area. At this time numerous trials of electric vehicles are reported for utility vehicles, buses and garbage trucks; for example:

- Woolworths is trialing electric delivery trucks among its food truck fleet in Victoria

²³ <http://www.arnhem.com.au/how-green-are-electric-vehicles/>

[https://www.ntc.gov.au/Media/Reports/\(F4FA79EA-9A15-11F3-67D8-582BF9D39780\).pdf](https://www.ntc.gov.au/Media/Reports/(F4FA79EA-9A15-11F3-67D8-582BF9D39780).pdf)

²⁴ <https://www.mynrma.com.au/community/news-and-media-centre/nrma-to-build-ev-fast-charging-network>

²⁵ <https://www.mynrma.com.au/-/media/documents/advocacy/the-future-is-electric.pdf?la=en>

²⁶

https://www.cmtedd.act.gov.au/open_government/inform/act_government_media_releases/rattenbury/2018/new-action-plan-to-drive-growth-in-electric-vehicles

- BHP has implemented one light commercial vehicle EV in its mining fleet at Olympic Dam, and Tesla has committed to begin production of light commercial EVs by 2020²⁷
- Waste Management Ltd, a NZ company, is implementing trials of electric vehicle garbage trucks in its fleet with a view to expanding EVs depending on the outcomes²⁸
- East waste in South Australia is planning an assessment of the case for powering electric garbage trucks with renewables in 2018/19²⁹
- The Victorian Labour Government has announced that Latrobe Valley is set to become the national centre for Australian electric vehicle production. This project will be done in partnership with SEA Electric³⁰
- City of Casey has rolled out the first electric waste truck in Australia with plans for more to be deployed across the country³¹.

2.5.3.2 Hydrogen vehicles

Hydrogen vehicles have zero carbon emissions in the expenditure of the fuel hydrogen. In fact, the only emissions that arise from hydrogen cars is water vapour. The process of producing hydrogen however does emit emissions as it is very energy intensive. The ACT Government recently purchased 20 hydrogen cars as part of their Renewable Transport Fuels project, where the hydrogen will be sourced from the electricity generated from a wind farm.³²

Hydrogen cars currently have limited commercial availability and lack refuelling stations in Australia. Currently, there is only one at Hyundai's head office in Sydney³³. Once hydrogen cars become available in Australia, it is likely that the infrastructure will also follow.

²⁷ <https://www.news.com.au/technology/innovation/motoring/motoring-news/genius-aussie-plan-to-make-underground-mining-greener/news-story/bfc2563baa522902ad26609158cc8fe1>

²⁸ <https://orders.wastemanagement.co.nz/site/sustainability>

²⁹ <https://www.news.com.au/national/south-australia/east-waste-looking-at-electric-garbage-trucks-powered-by-renewable-energy-to-slash-costs-and-reduce-emissions/news-story/d2dda62d10a5b94ddb6095d73671fb46>

³⁰ <https://thedriven.io/2018/10/30/transition-massive-new-ev-factory-announced-for-victorias-latrobe-valley/>

³¹ <https://thewest.com.au/lifestyle/motoring/electric-waste-truck-is-an-aussie-first-ng-b88970174z>

³² <https://www.news.com.au/technology/innovation/motoring/hitech/toyota-to-bring-hydrogen-fuelcell-car-to-australia/news-story/a10ead64fda1a413f4146b26b8f8e4ef>

³³ <https://www.news.com.au/technology/innovation/motoring/hitech/toyota-to-bring-hydrogen-fuelcell-car-to-australia/news-story/a10ead64fda1a413f4146b26b8f8e4ef>

2.6 Best practice energy efficiency and renewable energy opportunities

2.6.1 Energy efficiency opportunities

The most cost-effective renewable energy is the energy that is not used. Businesses have made enormous strides to use energy more efficiently in recent years, helped by better information, financial incentives and the rapid development of technologies such as LED lighting.

Energy demand reduction can be planned for in terms of three distinct opportunities: energy efficiency, technology upgrades and sustainable growth plans.

By identifying efficiency opportunities in these three ways, Council can project what future energy consumption may be. Having more clarity on future energy use means that Council is well informed about the likely amount of renewable energy it will need to develop and invest in to meet a renewable energy or carbon reduction goal. If Council can maintain a focus on optimising its energy demand, it will lessen the cost of renewables in the long term.



FIGURE 22: REDUCING ENERGY DEMAND THROUGH ENERGY EFFICIENCY

Energy efficiency/productivity plans will typically be short-term focused and will look at energy waste, behavioural improvements, end-of-life technology upgrades and cost-effective retrofits such as LED lighting and Building Management System (BMS) optimisation.

Technology upgrades look at capital-intensive equipment that will be replaced over the medium and long-term. This way, end-of-life opportunities to implement best practice technologies can be planned and budgeted.

Sustainable growth or expansion strategies provide opportunities for organisations to ensure the lowest lifetime cost for energy is locked in from the outset rather than as an after-thought, which can be more expensive in the long run. Strategies to achieve this include efficient design, technology selection and control plans.

Figure 22 highlights that working across a number of opportunities strategically will result in more efficient outcomes, including streetlighting, LED lighting upgrades, air conditioning and Building Management System upgrades, building power and motor systems.

2.6.2 Renewable energy opportunities

Installing renewable energy such as **solar PV**, solar hot water or heat pumps behind the meter ensures that Council can maximise the financial benefits, as energy distribution costs are avoided as well as retail energy charges.

Just a few years ago it was uneconomic to export excess renewable energy into the grid. Nowadays, with lower solar PV prices, feed-in-tariffs and declining costs of battery energy storage systems, it can make sense to oversize PV systems if Council has roof or land space available.

Battery energy storage systems and complementary technologies are also constantly improving, and their costs are reducing over time. This will help Council to maximise the value of its renewable energy systems in future and will help reduce grid costs. **Solar hot water** is also an excellent opportunity to switch to a renewable energy source for heating water.



FIGURE 23: RENEWABLE ENERGY OPPORTUNITIES

Many councils have property roof space, infrastructure or land, that is ideally suited to the development of **mid-scale solar farms** in front of the meter, or “grid-side”. If not, buying or leasing land for this purpose may be feasible.

The generated energy from such a solar farm can be used to make Council’s electricity supply renewable. The major aspects that an assessment will evaluate includes the unsubsidised cost of energy generation, treatment of renewable energy certificates consistent with Council’s goals, and retailer engagement and negotiation to facilitate this additional supply source.

Sites that other councils have assessed for solar farms, and in some cases developed, include wastewater treatment land, landfill sites, airports and dams.

When the cost-effective capacity of energy demand reduction and renewable energy production has been exhausted, the **purchase of renewable energy** may be the best way to achieve ambitious carbon reduction or renewable energy targets.

The traditional way for energy users to source renewable energy has been through the purchase of accredited GreenPower® or other green energy from energy retailers or providers. Usually, this

attracts a premium to grid energy supply. Similarly, energy users can purchase Renewable Energy Certificates (RECs) to 'green' their energy supply, at the prevailing market rate.

The main way in which renewable energy at scale has been sourced in recent years is via corporate **power purchase agreements (PPAs)**, where renewable energy developers and retailers have engaged with end users to develop and/or sell all or a percentage of an organisation's electricity requirements from renewable energy.

The vast majority of corporate PPAs have been based on utility-scale solar and wind energy. In future we will see solar, wind, pumped hydro and battery storage be able to offer energy agreements based on renewables that are sculpted to an end user's energy demand profile, with low exposure to wholesale markets.

Increasingly customer-focused models may enable energy users such as Dubbo Regional Council to receive renewable energy supply offers that are comparable to 'regular' retailer offers that are sourced from the mix of energy sources supplying the grid.

An example of where NSW councils have gone to market for a corporate PPA can be seen below.

2.6.2.1 SSROC34 - renewable energy procurement

Southern Sydney Regional Organisation of Councils Inc (SSROC) has signed a landmark agreement on behalf of 18 councils that will result in up to 35% of their retail electricity being supplied by a renewable energy generator from 1 July 2019. This innovative approach, achieved through a renewable energy Power Purchase Agreement (PPA), allows councils to purchase renewable electricity without exposure to the volatility of the National Electricity Market (NEM). The renewable energy PPA will provide councils with significant cost savings compared to the current market while also reducing their carbon emissions.

The ground-breaking contract will provide councils with renewable energy from the Moree Solar Farm project until the end of 2030, with the balance of their retail electricity needs being supplied as regular grid electricity by Origin Energy for at least the next three years.

One benefit highlighted in the SSROC approach was the value of aggregating the demand of multiple end users to achieve a better price for renewable energy supply.

³⁴ All text sourced from <http://ssroc.nsw.gov.au/18-nsw-councils-sign-39gwh-per-year-landmark-renewable-energy-agreement-to-cut-emissions-and-costs/>

2.7 Potential scenarios for electricity consumption to 2030

2.7.1 Scenario 1: no action

The first scenario accounts for DRC's electricity consumption from Council assets (shown in dark grey) and streetlighting (shown in light grey), starting from the FY17/18 baseline, being 23,000 MWh. The baseline consumption is projected to 2030, by assuming a 1% population growth rate per annum (from Profile ID) and no major changes to Council assets.

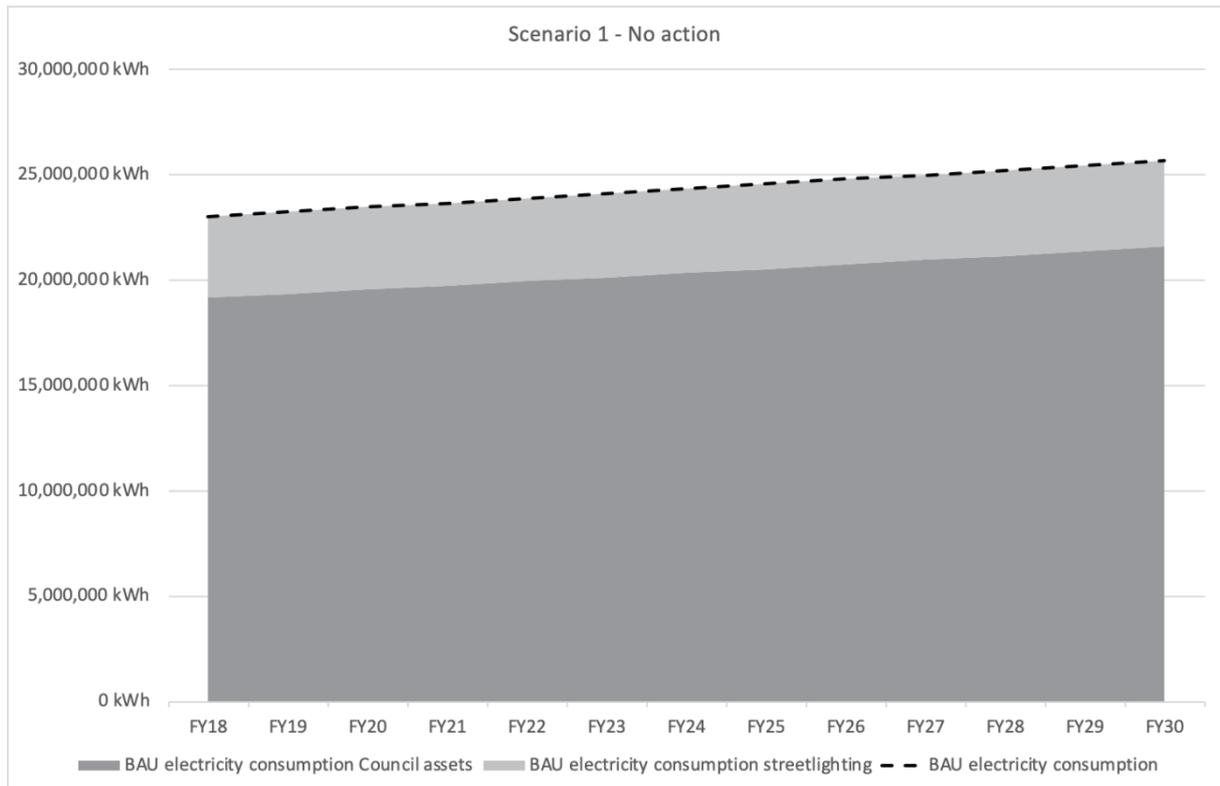


FIGURE 24: ELECTRICITY CONSUMPTION TO FY29/30 WITH NO ACTION BY DRC

If Council undertakes no energy efficiency or renewable energy measures, its electricity consumption could be close to 26,000 MWh in 2030.

2.7.2 Scenario 2: medium actions

Scenario 2 takes into account the population growth as stipulated in scenario 1 but shows the reduction in electricity consumption from possible energy efficiency opportunities like streetlighting upgrades, building LED, technology upgrades and sustainable procurement. Scenario 2 also assumes reductions from potential energy self-generation through solar PV behind the meter.

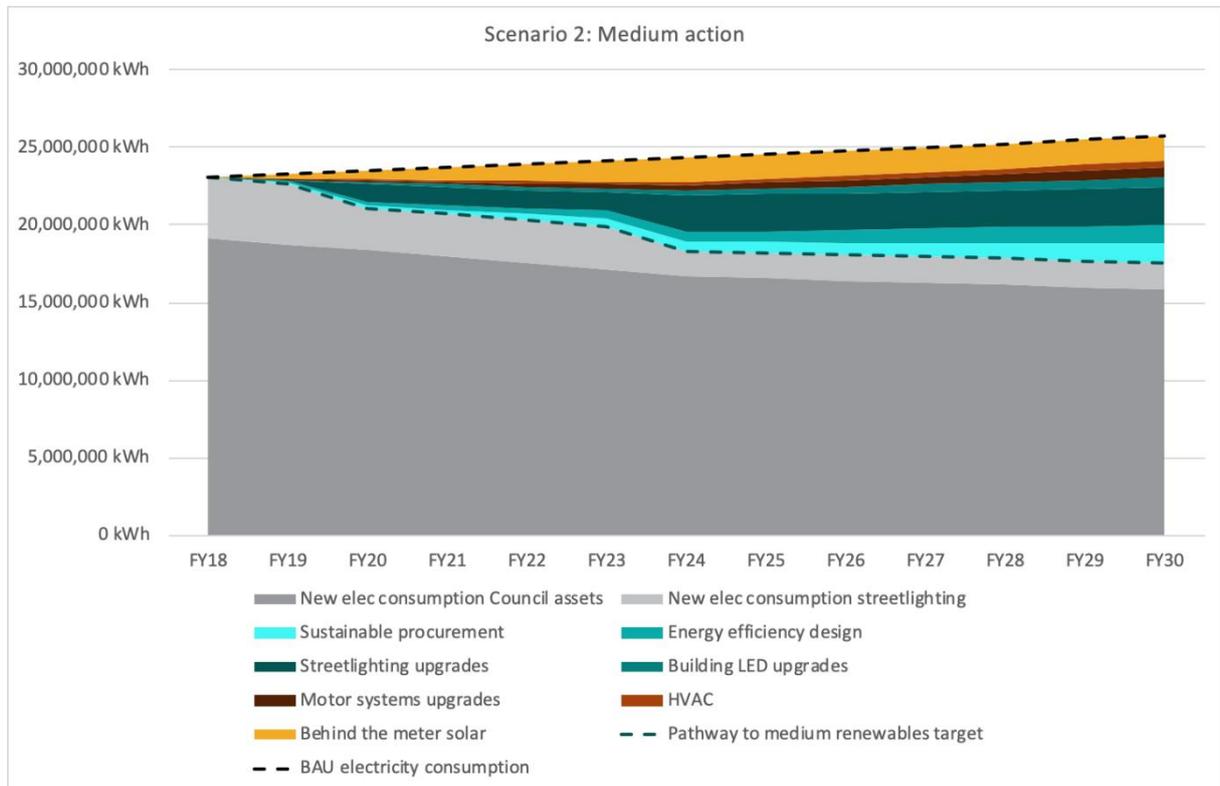


FIGURE 25: ELECTRICITY CONSUMPTION TO FY29/30 WITH MEDIUM ACTION BY DRC

As can be seen in Figure 25, these measures reduce Council’s electricity consumption significantly. In this particular example, Council’s energy consumption could be as little as 17,600 MWh in 2030 (compared to 26,000 MWh in the absence of any actions).

2.7.3 Scenario 3: 100% renewable electricity

Based on previous experience, it is possible to achieve a maximum of 40% carbon reduction through onsite measures such as energy efficiency or renewable energy. The remainder can only be met through ambitious actions like building a mid-scale solar farm or through sourcing renewable energy.

Scenario 3 accounts for all actions from scenario 2, but additionally shows the impact of power purchase agreements (PPAs) to reach 100% renewable energy in 2030. In this particular example, DRC would increase the percentage of renewable energy purchases every three years, starting with 20% renewables initially.

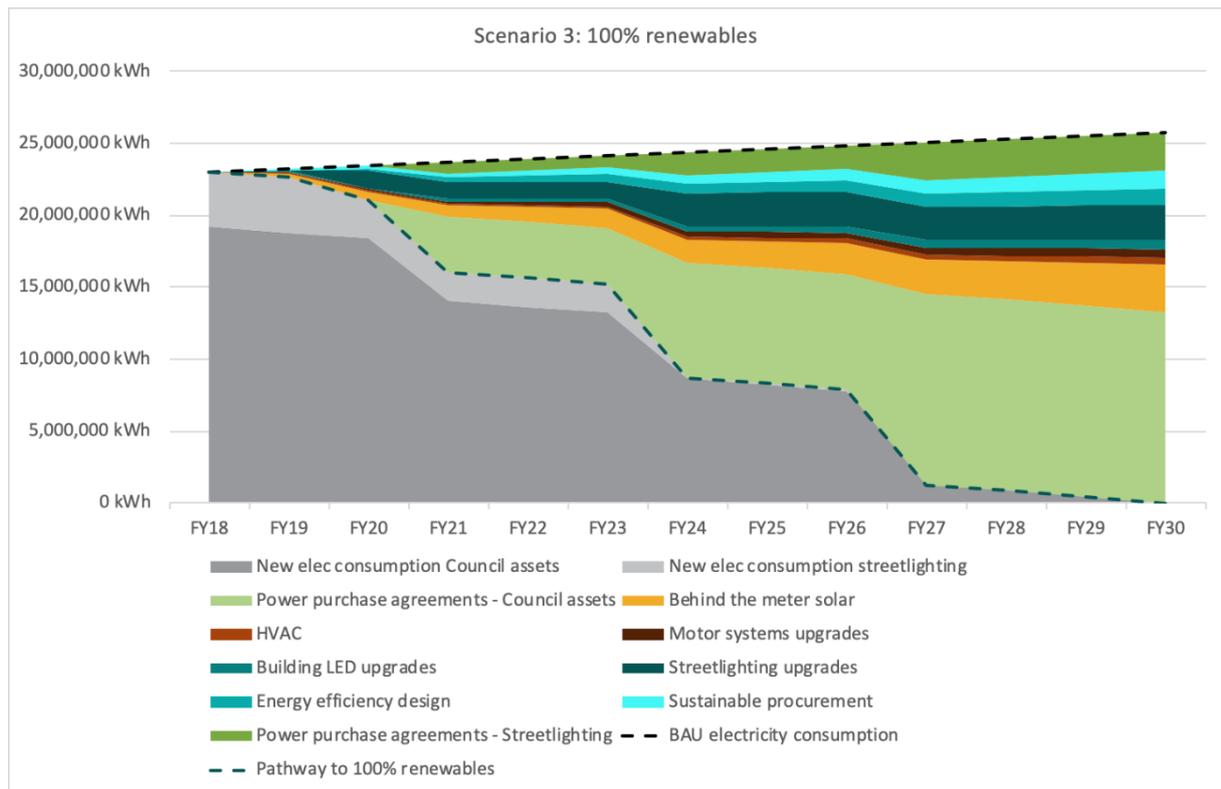


FIGURE 26: ELECTRICITY CONSUMPTION TO FY29/30 WITH A PATH TO 100% RENEWABLE ELECTRICITY

2.8 Feedback received at ELT and councillor workshops

Two workshops were run on 13 March, the first with DRC's Executive Leadership Team (ELT), the second with DRC's councillors.

2.8.1 Agenda for the workshops

The workshops started with a presentation from 100% Renewables on the international and local context for energy management. Previous and current initiatives by DRC were discussed, as well as the three scenarios presented in the previous section. This was followed by a set of activities.

The questions the activities sought to answer were as follows:

- What is Council's vision for its energy strategy?
- What are the types of technology and/or key projects Council would like to be investigated further to help achieve the vision?

2.8.2 ELT workshop - attendance

The following is a list of attendees of the ELT workshop.

Attendees

1. Ian McAlister – Manager Recreation and Open Space
2. John Watts – Director Community and Recreation
3. Maria Crisante – Executive Manager People, Culture and Safety
4. Steven Jennings – Director Planning and Environment (Acting)
5. Linda Christof – Manager Dubbo Regional Theatre and Convention Centre
6. Mark Giebel – Manager Solid Waste
7. Elizabeth Bell – Corporate Procurement Specialist
8. Natasha Comber – Director Economic Development and Business
9. Debbie Archer – Manager Environmental Control
10. Steven Colliver – Manager Fleet Services
11. Simon Tratt – Manager Property Assets
12. Craig Giffen – Director Corporate Services
13. Michael McMahon – CEO
14. Stephen Carter – Manager Water Supply and Sewerage
15. Chris Devitt – Director Infrastructure and Operations
16. Stephen Howlett – Manager Infrastructure Strategy
17. Catriona Jennings – Sustainability and Education Officer

Apologies:

- Jacki Parish – Manager Airport Operations
- Andrew Glassop – Manager Cultural Services
- Michael Ferguson – Executive Manager Governance and Internal Control
- Ross McCarthy – Manager Saleyards and Showground
- Jane Bassingthwaigthe – Chief Financial Officer
- Stephen Wallace – Director Planning and Environment

2.8.3 ELT workshop - key findings

The following shows the key findings of the ELT workshop.

- The strategy should encompass other areas like water, waste and the natural environment as well
- The strategy should include actions for Council operations as well as for the community
- Special innovation fund for renewables and fund energy efficiency from budget
- Council needs to undertake a solar feasibility study to investigate the roll-out of small and larger scale solar installations for its assets

2.8.4 Councillor workshop – attendance

The following is a list of attendees of the councillor workshop.

Attendees

1. Councillor Jane Diffey
2. Councillor Kevin Parker
3. Councillor Vicki Etheridge
4. Deputy Mayor Anne Marie Jones
5. Mayor Ben Shields
6. Councillor John Ryan
7. Councillor David Grant
8. Michael McMahon - CEO
9. Chris Devitt – Director Infrastructure and Operations
10. Natasha Comber – Director Economic Development and Business
11. Craig Giffen – Director Corporate Services
12. Steven Jennings - Director Planning and Environment (Acting)
13. Debbie Archer - Manager Environmental Control
14. Catriona Jennings - Sustainability and Education Officer

Apologies:

- Councillor Stephen Lawrence
- Councillor Greg Mohr
- Councillor Dayne Gumley
- Director Community and Recreation – John Watts

2.8.5 Councillor workshop - key findings

The following shows the key findings of the councillor workshop.

- Council to lobby the State Government to provide financial support for the rollout of LED streetlighting in the short term.
- Council to undertake a feasibility study into the bulk upgrade of street lighting across the LGA, including collating all relevant information and financial options to undertake the project in the short term.
- Dependent on the business case for a bulk upgrade of LED streetlighting, undertake the project in the short to medium term.

- Council to undertake a feasibility study to identify all suitable Council-owned sites or facilities for solar PV installations, financing options and a program for the staged roll-out of installations in the short term.
- Council to undertake a staged roll-out of solar PV installations across all suitable council-owned sites or facilities in the short and medium term.
- The energy strategy should cover both council operations and the community
- Encouragement of the community to install solar PV panels despite the 'community solar revolving fund' not being an option at present. Please refer to motion from Councillor Diffey at Council meeting 250219 which states that:
 - Council acknowledge the resourcing requirements of implementing and administering a community solar revolving fund and defer further investigation into such a Fund until permissive legislation is introduced.
 - Council write to Local Government NSW to request that it "prioritise" lobbying the NSW Government for an amendment to the NSW Local Government Act 1993 that will enable local councils to apply a voluntary Special Charge Scheme (opt-in system) to council rates to fund environmental programs, such as the installation of solar photovoltaic (PV) systems on private land.
- Lobbying the State Government to continue to improve the energy requirements of BASIX and educating the local building industry to incorporate energy efficiency and renewable energy considerations, as well as sustainable materials into design and planning.
- Council playing a leadership role in the community in terms of energy efficiency and renewable energy measures
- Making sure that new facilities incorporate energy efficiency and renewable energy design considerations.
- Investigating innovative energy initiatives like waste-to-energy, or algae as a source of power

3 The Strategy

3.1 Strategic Vision / Objective

Dubbo Regional Council is a leader in regional New South Wales in the reduction of energy consumption, increased energy efficiency and the continued adaptation to and use of renewable energy.

3.2 Policy Context

The Dubbo Regional Council Energy Strategy and Implementation Plan is designed to support and guide Council in reducing energy consumption, increasing energy efficiency, increasing the use and adoption of renewable energy resources and sustainable transport while taking into account the needs and desires of a growing community. The Strategy and Implementation Plan also seeks to support the local community in becoming energy smart.

Council's requirements for the development of an Energy Strategy and Implementation Plan has arisen from the 2040 Community Strategic Plan (CSP) which states under Strategy 2.1.3.3 that *an energy strategy is to be prepared for Council facilities and buildings by the Division of Planning and Environment*. Additional CSP strategies supporting the development of the Strategy and Implementation Plan include: *2.1 Opportunities for use of renewable energy are increased* and *5.9 Environmental sustainability is a priority*.

While the Strategy supports the direction and outcomes Council would like to achieve, the implementation plan will provide the actions and tasks for achieving the key strategic objectives under the key strategy areas.

The Strategy and Implementation Plan sits below the 2040 CSP and informs Council's four year Delivery and one year Operational Plans. During the revision of these Plans Council Directors will be required to consider the inclusion of the relevant strategies and actions.

3.3 Key Strategy Areas

The Energy Strategy has been divided into four key strategy areas. The individual strategies include:

1. Energy Efficiency – products, procedures that increase the efficient use of energy in Council's activities and operations
2. Renewable Energy – electricity derived from sustainable sources such as the sun
3. Sustainable Transport – use of, and operation of vehicles in councils operations
4. Supporting Energy Smart Communities – actions to support the community in becoming energy smart

3.3.1 Strategy Area One – Energy Efficiency

Goal:

Council implements energy efficiency practices and improvements across its activities and operations.

Rationale:

Energy inputs are expensive, and organisations see this reflected on their electricity, gas and transport fuel bills. The higher the price an organisation pays for energy, the greater the value of being more energy efficient and switching to renewables.

Energy efficiency means to either perform the same activity with less energy input or accomplish more activity with the same amount of energy input. Either way, Council can achieve more with each unit of energy consumed and realise the cost savings.

Key Strategic Outcomes:

1.1	Council staff are aware of and supported to implement energy-efficiency measures.
1.2	Council’s procurement policies and plans set minimum energy efficiency benchmarks
1.3	Council major capital works and/or building projects set minimum energy efficiency benchmarks in their design and construction
1.4	Council adopts best practice energy efficiency measures across all buildings and facilities, with a priority on upgrading very high to high energy using sites.
1.5	Council rolls out energy efficient street lighting across the local government area
1.6	Technological advances in energy-efficient products are investigated to assess the feasibility of implementation
1.7	Council’s energy consumption is monitored and energy savings are assessed

3.3.2 Strategy Area Two – Renewable Energy

Goal:

Council obtains 50% of its predicted electricity consumption by 2025 from renewables, directly or by purchasing renewable energy.*

Rationale:

Electricity use for street lighting and council assets currently results in 87% of Council's greenhouse gas emissions from energy consumption (electricity, gas, fuel). Council can therefore reduce emissions associated with energy consumption through focusing on increasing the amount of electricity sourced from renewable energy. In addition, investing in renewable energy opportunities such as behind the meter solar PV systems on Council assets can provide financial savings to Council when grid electricity charges are offset.

Adopting and pursuing a 50% target for renewables by 2025 would position Council among a number of leading NSW Councils who have adopted ambitious renewable energy and carbon goals in recent years. A common theme amongst local councils is '100% renewables by 2030' and the proposed 50% target sets Council on the same trajectory. The Strategy timeframe only extends to 2025 because it is believed that the renewable energy industry will change so rapidly within the next 5 years that a revision of Council's Strategy & Implementation Plan will be required.

100% Renewables (expert energy consultant) provided further information as to what actions Council should prioritise to meet the above proposed target with the following advice provided in their report dated 25 November 2019 (TRIM Ref. ED19/187509):

- 1. Focus on behind the meter solar PV at all sites where this is feasible, aiming to meet onsite demand with some export where this is permitted by Essential Energy.*
- 2. Commence investigation into a renewable energy power purchase agreement (PPA), to be included in either the next electricity supply agreement for Council's large sites or the following tender (e.g. in 2 to 3 years' time).*
- 3. For a solar farm on Council-owned land, limit current investigations to preliminary enquiries with Essential Energy about the likely potential to connect 5 MW up to say 15 MW into their grid from sites owned by Council that could be used for this purpose. Maintain a watch on price / EPC trends for mid-scale solar projects as well as trends in battery storage for grid-scale projects. Sizeable falls in technology and EPC costs may trigger a feasibility assessment of suitable sites in a few years' time.*
- 4. Battery storage, solar hot water and opportunities such as virtual net metering / local generation credits, micro grids and the like should continue to be pursued as part of an overall renewable energy / carbon abatement strategy. However in the context of large goals such as 50% renewables, the first two priorities here should be the major focus.*

Key Strategic Outcomes:

2.1	Council staff are aware of and supported to implement renewable energy measures.
2.2	Council major capital works and/or building projects set minimum renewable energy benchmarks in their design and construction
2.3	Council develops and implements a behind-the-meter solar PV program to meet up to 25% of its predicted electricity consumption* from renewables by 2025.
2.4	Council develops and implements a Power Purchasing Agreement (PPA) to meet up to 25% of its predicted electricity consumption* from renewables by 2025
2.5	Council implements landfill gas methane flaring and investigates methane capture for electricity generation.
2.6	Council is aware of and investigates alternative renewable energy opportunities
2.7	Council maintains a revolving energy fund to finance renewable energy projects
2.8	Solar PV systems on Council buildings and facilities are managed, monitored and maintained

**Council's predicted electricity consumption by 2025 is estimated to be 24,500 MWH should no action be taken to reduce energy use across Council operations. It is therefore expected that a maximum of 12,250 MWH of electricity would need to be sourced from renewable energy sources by 2025.*

3.3.3 Strategy Area Three – Sustainable Transport

Goal:

Council plans for, and begins to transition to, a zero emissions fleet by 2025.

Rationale:

Fuel use (petrol, diesel) currently results in 12% of Council’s greenhouse gas emissions from energy consumption (electricity, gas, fuel). Diesel use in particular accounts for 11% of these emissions, and is most likely consumed by Council’s heavy vehicle fleet.

Zero emissions vehicle’ refers to vehicles that do not emit any greenhouse gas emissions, and includes plug-in hybrid electric, battery electric and hydrogen fuel cell electric vehicles, as well as electric bikes. Other zero emissions forms of transport include walking and cycling.

Transitioning to a zero emissions fleet can result in reduced air pollution with vehicles generally cleaner to run, they are quieter, and are thought to have lower running costs than a conventional vehicle due to decreased fuel cost and reduced servicing and insurance costs.

While EV charging will add to demand for electricity, emissions from vehicle charging will fall as Council aims to increase the percent of its electricity sourced from renewable resources.

Key Strategic Outcomes:

3.1	Council understands current fleet practices and the opportunities available to reduce fleet fuel use, mileage, greenhouse gas emissions and fleet size without compromising on service delivery.
3.2	Council implements practices to optimise current fleet performance, reducing fuel use and greenhouse gas emissions.
3.3	Council understands, and develops the business case for, transitioning to a zero emissions fleet.
3.4	Council implements actions towards transitioning to a zero emissions fleet.

3.3.4 Strategy Area Four – Supporting Energy Smart Communities

Goal:

The community is supported in becoming energy smart and ultimately adopts energy efficient, renewable energy and sustainable transport practices.

Rationale:

Increasing concerns over climate change, managing energy supply to meet growing demand levels, and reducing the environmental impacts associated with energy use are some of the most significant challenges for government, business and the community.

Recent electricity price increases and proposed further increases are driving electricity customers to take steps to reduce consumption and install renewable energy. Government at all levels is taking action to reduce energy consumption and to cut greenhouse gas emissions associated with the use of non- renewable energy sources. This action includes supporting communities in becoming ‘energy smart’.

Key Strategic Outcomes:

4.1	Council strategic and statutory planning processes support and promote energy efficiency, renewable energy and sustainable transport.
4.2	Council lobbies state and federal government to address barriers to the take up of renewable energy, energy efficiency and/or sustainable transport, and to support increased ambition in these areas.
4.3	Council promotes and supports programs to increase community knowledge, skills and capacity to shift to renewable energy, energy efficiency and sustainable transport options.
4.4	Council investigates, and if feasible, provides incentives to the community to increase the uptake of energy efficiency, renewable energy and sustainable transport options
4.5	Council supports the establishment of a community energy group to drive community energy initiatives across the local government area. Initially this may mean providing grant writing support to apply for relevant funds to begin this process.

4 Implementation Plan

4.1 Implementation Plan

This section contains specific actions to be undertaken by Dubbo Regional Council to ensure the key strategic outcomes in the Energy Strategy are addressed.

A copy of the Implementation Plan is below.

The delivery timeframe for the Plan will be from when the Energy Strategy and Implementation Plan is adopted by the Executive Leadership Team and/or Council until June 2025.

The delivery timeframe is split into three categories and assigned against each specific action.

- Short Term – completion within 1-2 years
- Medium Term – completion within 3-5 years
- Ongoing – a recurring event to be completed on a continuing basis

Strategy Area	Key Strategic Outcomes		Actions	Delivery	Funding	Responsibility	
Energy Efficiency	1.1	Council staff are aware of and supported to implement energy-efficiency measures.	1.1.1	A staff induction video is developed for and shown at all staff inductions to raise awareness and knowledge of Council's sustainability principles and practices.	Short Term	Development & Environment	People and Culture Team
			1.1.2	An annual staff training session in asset energy management is conducted to drive improvements in facility and asset energy management.	Ongoing	Organisational Performance	Manager Property Assets
Energy Efficiency	1.2	Council's procurement policies and plans set minimum energy efficiency benchmarks.	1.2.1	<p>The Council Procurement Policy is amended and sets a number of minimum energy efficiency benchmarks.</p> <p>Example provisions could include for the purchase of lighting, appliances and/or hot water systems the following:</p> <ul style="list-style-type: none"> - Where a light is end of life, replacement must be with a Light Emitting Diodes (LEDs), subject to site conditions and funding. Consideration should also be given to adding sensor controllers (motion & light). - For all product categories covered under the Australian Government's Equipment Energy Efficiency rating scheme only products <i>within two stars of the best available rating</i> are to be considered (includes televisions, refrigerators, dishwashers, computers, monitors, air conditioners, washers, dryers). Refer: www.energyrating.gov.au 	Short Term	Organisational Performance	Corporate Procurement Specialist / Organisational Sustainability Coordinator

Strategy Area	Key Strategic Outcomes		Actions		Delivery	Funding	Responsibility
				- Where a gas appliance or system is end of life consider electrification and/or renewable energy options (e.g. solar panel or heat pump hot water systems).			
Energy Efficiency	1.3	Council major capital works and/or building projects set minimum energy efficiency benchmarks in their design and construction.	1.3.1	Council develops and adopts a <i>Sustainable Buildings Policy</i> which sets minimum energy efficiency benchmarks in the design and construction of major capital works and/or buildings projects. During Policy development consider the inclusion of the <i>Green Building Council of Australia's Green Star Rating Program</i> , or similar program, to define energy efficiency benchmarks.	Short Term	Development & Environment	Organisational Sustainability Coordinator
			1.3.2	Council implements a <i>Sustainable Buildings Policy</i> which sets minimum energy efficiency benchmarks in the design and construction of major capital works and/or buildings projects.	Short Term	All Council Divisions	Relevant Asset Managers
Energy Efficiency	1.4	Council adopts best practice energy efficiency measures across all buildings and facilities, with a priority on upgrading <i>very high to high energy using sites</i> .	1.4.1	Develop and implement an energy efficiency project to prioritise the upgrade of <i>very high to high energy using sites</i> across Council (E.g. sites using >100,000 kwh per year and or > \$20,000 in energy bills per year). Consider upgrading end of life motor systems, lighting, HVAC and electrification of gas appliances, space and water heating systems.	Short Term	Relevant Divisions	Manager Property Assets

Strategy Area	Key Strategic Outcomes		Actions		Delivery	Funding	Responsibility
				This project would include seeking quotations from expert consultants to undertake energy audits, recommend improvements, and implement end of life upgrades where appropriate and cost effective.			
Energy Efficiency	1.5	Council rolls out energy efficient street lighting and smart controls program across the local government area	1.5.1	Work in collaboration with Essential Energy to undertake a LED street light replacement program across the LGA	Short Term	Infrastructure	Organisational Sustainability Coordinator
			1.5.2	Work in collaboration with Essential Energy to investigate the business case for, and if feasible install, smart controls for LED street lights across the LGA. Smart controllers can enable light dimming further enhancing energy savings.	Short Term	Infrastructure	Organisational Sustainability Coordinator
			1.5.3	Work in collaboration with Essential Energy to investigate the business case for, and if feasible install integrated smart pole technology within the CBD areas of Dubbo (Macquarie St, Talbragar St) and Wellington (Swift St).	Medium Term	Infrastructure	Manager Infrastructure Strategy & Design
			1.5.4	Undertake a LED light replacement program across all Council parks, reserves and open space, with a priority focus on Victoria and Cameron Parks.	Short Term	Liveability	Manager Recreation & Open Space
			1.5.5	Develop and implement appropriate policy to ensure all new developments and future street lighting upgrades adopt LED technology	Short Term	Infrastructure	Manager Infrastructure Strategy & Design

Strategy Area	Key Strategic Outcomes		Actions		Delivery	Funding	Responsibility
Energy Efficiency	1.6	Technological advances in energy-efficient products are investigated to assess the feasibility of implementation	1.6.1	New technologies are identified and capital costs are monitored to assess feasibility for implementation across key Council buildings	Ongoing	Organisational Performance	Manager Property Assets
			1.6.2	Pilot, and build the business case for, installing intelligent building management systems across key Council buildings	Medium Term	Organisational Performance	Manager Property Assets
Energy Efficiency	1.7	Council's energy consumption is monitored and energy savings are assessed	1.7.1	Energy management tools, such as e21, are utilised to monitor Council's energy consumption.	Ongoing	Organisational Performance	Corporate Procurement Specialist
			1.7.2	Energy performance of buildings and facilities, where monitored via Council's energy management tool, is regularly reported.	Ongoing (quarterly)	Development & Environment	Organisational Sustainability Coordinator
			1.7.3	Smart Metering and internal monitoring software is installed at <i>very high to high energy consuming</i> Council facilities and/or buildings.	Short Term	Organisational Performance	Manager Property Assets
Renewable Energy	2.1	Council staff are aware of and supported to implement renewable energy measures.	2.1.1	Council continues to be a member of the NSW Department of Planning, Industry and Environment's (DPIE) Sustainability Advantage Program, or a similar program, of whom builds the capacity of council staff to understand and implement renewable energy measures.	Ongoing	Development & Environment	Organisational Sustainability Coordinator

Strategy Area	Key Strategic Outcomes		Actions		Delivery	Funding	Responsibility
Renewable Energy	2.2	Council major capital works and/or building projects set minimum renewable energy benchmarks in their design and construction	2.2.1	<p>Council develops and adopts a <i>Sustainable Buildings Policy</i> which sets minimum renewable energy benchmarks in the design and construction of major capital works and/or buildings projects.</p> <p>During Policy development consider the inclusion of the Green Building Council of Australia's Green Star Rating Program, or similar program, to define renewable energy benchmarks. For example a 5 or 6 Green Star Rating is generally associated with a 100% renewable energy requirement and related to high cost projects (>\$5 million).</p>	Short Term	Development & Environment	Organisational Sustainability Coordinator
			2.2.2	Council implements a <i>Sustainable Buildings Policy</i> which sets minimum renewable energy benchmarks in the design and construction of major capital works and/or buildings projects.	Short Term	All Council Divisions	Relevant Asset Managers
Renewable Energy	2.3	Council develops and implements a behind-the-meter solar PV program to meet up to 25% of its predicted electricity consumption* from renewables by 2025.	2.3.1	Council develops a behind-the-meter solar PV program to meet up to 25% of its predicted electricity consumption* from renewables by 2025.	Short Term	Development & Environment	Organisational Sustainability Coordinator
			2.3.2	Council implements a behind-the-meter solar PV program to meet up to 25% of its predicted electricity consumption* from renewables by 2025.	Short Term	Development & Environment <i>(Revolving Energy Fund refer 2.7.1)</i>	Manager BILT

Strategy Area	Key Strategic Outcomes		Actions		Delivery	Funding	Responsibility
Renewable Energy	2.4	Council develops and implements a Power Purchasing Agreement (PPA) to meet up to 25% of its predicted electricity consumption* from renewables by 2025	2.4.1	Council develops a Power Purchasing Agreement (PPA) program to meet up to 25% of its predicted electricity consumption* from renewables by 2025.	Short Term	Development & Environment	Organisational Sustainability Coordinator
			2.4.2	Council implements a Power Purchasing Agreement (PPA) to meet up to 25% of its predicted electricity consumption* from renewables by 2025.	Medium Term	Organisational Performance	Corporate Procurement Specialist
Renewable Energy	2.5	Council implements landfill gas methane flaring and investigates methane capture for electricity generation.	2.5.1	Council continues to implement landfill gas methane flaring at its primary landfill facility.	Short Term	Development & Environment	Manager Resource Recovery & Efficiency
			2.5.2	Council commissions a detailed feasibility study of methane capture for electricity generation.	Medium Term	Development & Environment	Organisational Sustainability Coordinator
Renewable Energy	2.6	Council is aware of and investigates alternative renewable energy opportunities	2.6.1	New technologies are identified and capital costs are monitored to assess feasibility for implementation.	Ongoing	Development & Environment	Organisational Sustainability Coordinator
			2.6.2	Council investigates Virtual Net Metering or Virtual Power Plant (VPP) energy models to aggregate Council's solar capacity and offset energy use across all Council sites.	Medium Term	Development & Environment	Organisational Sustainability Coordinator

Strategy Area	Key Strategic Outcomes		Actions		Delivery	Funding	Responsibility
			2.6.3	Council expands solar battery storage capacity and create scalable storage networks across Council assets.	Medium Term	Development & Environment	Organisational Sustainability Coordinator
Renewable Energy	2.7	Council maintains a revolving energy fund to finance renewable energy projects	2.7.1	Council maintains a revolving energy fund to finance renewable energy projects inline with Council's Energy Strategy And Implementation Plan.	Short Term	Development & Environment	Organisational Sustainability Coordinator
Renewable Energy	2.8	Solar PV systems on Council buildings and facilities are managed, monitored and maintained	2.8.1	Council develops a policy for the installation, management, maintenance, and monitoring of solar PV systems on all Council buildings and facilities.	Short Term	Development & Environment	Organisational Sustainability Coordinator
			2.8.2	Council implements the policy for the <u>installation</u> of solar PV systems on all Council buildings and facilities.	Short Term	All Council Divisions	Relevant Asset Managers/ Manager BILT
			2.8.3	Council implements a policy for the <u>management, maintenance and monitoring</u> of solar PV systems on all Council buildings and facilities.	Short Term	Organisational Performance	Manager Property Assets
Sustainable Transport	3.1	Council understands current fleet practices and the opportunities available to reduce fleet fuel use, mileage, greenhouse gas emissions and fleet size without compromising on service delivery.	3.1.1	Undertake a Fleet Utilisation Study to examine current practices and to better understand the opportunities available to reduce fleet fuel use, mileage, greenhouse gas emissions and fleet size without compromising on service delivery.	Short Term	Infrastructure	Manager Fleet & Depot Services

Strategy Area	Key Strategic Outcomes		Actions	Delivery	Funding	Responsibility	
Sustainable Transport	3.2	Council implements practices to optimise current fleet performance, reducing fuel use and greenhouse gas emissions.	3.2.1	Procedures and/or programs to reduce fuel usage are developed. This may include minimum efficiency standards for council vehicles, or driver training and education.	Short Term	Infrastructure	Manager Fleet & Depot Services
			3.2.3	Council increases vehicle resource sharing where appropriate (fleet size optimisation).	Short Term	Infrastructure	Manager Fleet & Depot Services
			3.2.3	Council's maintenance and replacement program is implemented	Ongoing	Infrastructure	Manager Fleet & Depot Services
			3.2.4	Council promotes and supports ride or walk to work days, staff car pooling, and other less carbon intensive transport options throughout the year.	Ongoing	Executive Services	Executive Manager People, Culture and Safety
			3.2.5	Council investigates, and if feasible installs, improved bike storage and staff change facilities at key Council buildings.	Short Term	Organisational Performance	Manager Property Assets
			3.2.6	Council's vehicle emissions offset program, Neutral Drive, is retained and continued in the short term	Short Term	Infrastructure	Manager Fleet & Depot Services
			3.2.7	Biodiesel use by Council is retained and continued in the short term	Short Term	Infrastructure	Manager Fleet & Depot Services

Strategy Area	Key Strategic Outcomes		Actions		Delivery	Funding	Responsibility
Sustainable Transport	3.3	Council understands, and develops the business case for, transitioning to a low or zero emissions fleet	3.3.1	Council develops a <i>Transition to EV Roadmap</i> in order to understand how to, and build the business case for, transitioning to a low or zero emissions fleet.	Short Term	Infrastructure	Organisational Sustainability Coordinator / Manager Fleet & Depot Services
Sustainable Transport	3.4	Council implements actions towards transitioning to a low to zero emissions fleet	3.4.1	<p>Council implements initiatives towards transitioning to a zero emissions fleet.</p> <p>For example:</p> <ul style="list-style-type: none"> - Trial of electric vehicles and charging stations; - Setting minimum environmental performance criteria in Council Fleet Procurement Policy; - Inclusion of incentives to adopt zero emissions vehicles in Council's vehicle leaseback policies; - Inclusion of requirements to plan for zero emissions fleet within new council buildings and facilities; - Installing fast charging infrastructure across Council facilities as appropriate; - Continuing to monitor new zero emission fleet technology. 	Medium Term	Infrastructure	Manager Fleet & Depot Services

Strategy Area	Key Strategic Outcomes		Actions		Delivery	Funding	Responsibility
Supporting Energy Smart Communities	4.1	Council strategic and statutory planning processes support and promote energy efficiency, renewable energy and sustainable transport.	4.1.1	Energy efficiency, renewable energy and sustainable transport provisions included within Council strategic and statutory plans, including the Local Strategic Planning Statement, Community Strategic Plan, Local Environmental Plan, and Development Control Plan.	Short Term	Development & Environment	Manager Growth Planning
Supporting Energy Smart Communities	4.2	Council lobbies state and federal government to address barriers to the take up of renewable energy, energy efficiency and/or sustainable transport, and to support increased ambition in these areas.	4.2.1	Council to lobby state and federal government when and where appropriate	Ongoing	Development & Environment	Director Development & Environment
Supporting Energy Smart Communities	4.3	Council promotes and supports programs to increase community knowledge, skills and capacity to shift to renewable energy, energy efficiency and sustainable transport options.	4.3.1	Council promotes, and supports where resourcing is available, state or federal government programs for the deployment of renewable energy, energy efficiency and sustainable transport.	Short Term	Development & Environment	Organisational Sustainability Coordinator
			4.3.2	Council organises and hosts the annual <i>Dubbo Sustainable City Expo and Science Festival</i> or similar to showcase ways in which the Dubbo Region can live and work more sustainably and become energy smart.	Ongoing (Annually)	Development & Environment	Organisational Sustainability Coordinator

Strategy Area	Key Strategic Outcomes		Actions		Delivery	Funding	Responsibility
Supporting Energy Smart Communities	4.4	Council investigates, and if feasible, provides incentives to the community to increase the uptake of energy efficiency, renewable energy and sustainable transport options	4.4.1	Council, should legislation change to allow a special rates charge, investigate the option of providing incentives to the community to increase the uptake of energy efficiency, renewable energy and/or sustainable transport options.	Medium Term	Development & Environment	Organisational Sustainability Coordinator
Supporting Energy Smart Communities	4.5	Council supports the establishment of a <i>Community Energy Hub</i> to drive community energy initiatives across the local government area.	4.5.1	Investigate, develop and if feasible implement a pilot program which would see Council support the establishment of a <i>Community Energy Hub</i> . The Hub would be hosted by a local not-for-profit or a social enterprise organisation physically located or having an on the ground presence in the area. The Hub would aim to support the Dubbo community to access the skills and expertise required to develop and deliver community-based renewable energy projects, characterised by local ownership, participation and benefit sharing.	Medium Term	Development & Environment	Organisational Sustainability Coordinator

5 Monitoring, Reporting and Review

The effect of energy efficiency and renewable energy measures undertaken as a result of the Strategy and Implementation Plan will be monitored through Council's energy monitoring service – e21.

Key strategic goals, outcomes and actions from the Strategy and Implementation Plan must be incorporated by relevant Directors and Managers into Council's four year Delivery and one year Operational Plans.

In this light any progress achieved against the Strategy and Implementation Plan will be reported on by the Responsible Council Officer through the standard Council Integrated Planning and Reporting process:

- Progress Reports - Every Six Months
- Annual Report - Annually (November)

There will be an operational review of the Strategy and Implementation Plan by December 2021 to ensure the key strategic goals, outcomes and actions are consistent with Council's revised Community Strategic Plan.

A detailed strategic review of the Strategy and Implementation Plan will then be completed by December 2024.