RAMJO
Riverina & Murray Joint Organisation

RIVERINA AND MURRAY JOINT ORGANISATION (RAMJO)

# REGIONAL ENERGY STRATEGY

## 2022 – 2032

ALBURY CITY
BERRIGAN SHIRE
CARRATHOOL SHIRE
EDWARD RIVER
FEDERATION
GRIFFITH CITY
HAY SHIRE
LEETON SHIRE
MURRAY RIVER
MURRUMBIDGEE
NARRANDERA SHIRE

**Disclaimer**

Whilst every reasonable effort has been made to ensure the accuracy of the information presented, the Riverina and Murray Joint organisation and its employees, to the extent of the law, disclaim any liabilities to any person in respect to errors and omissions. We recognise that policies, programs and statistics may have changed since publishing this document.

# A thriving region abundant in sustainable communities

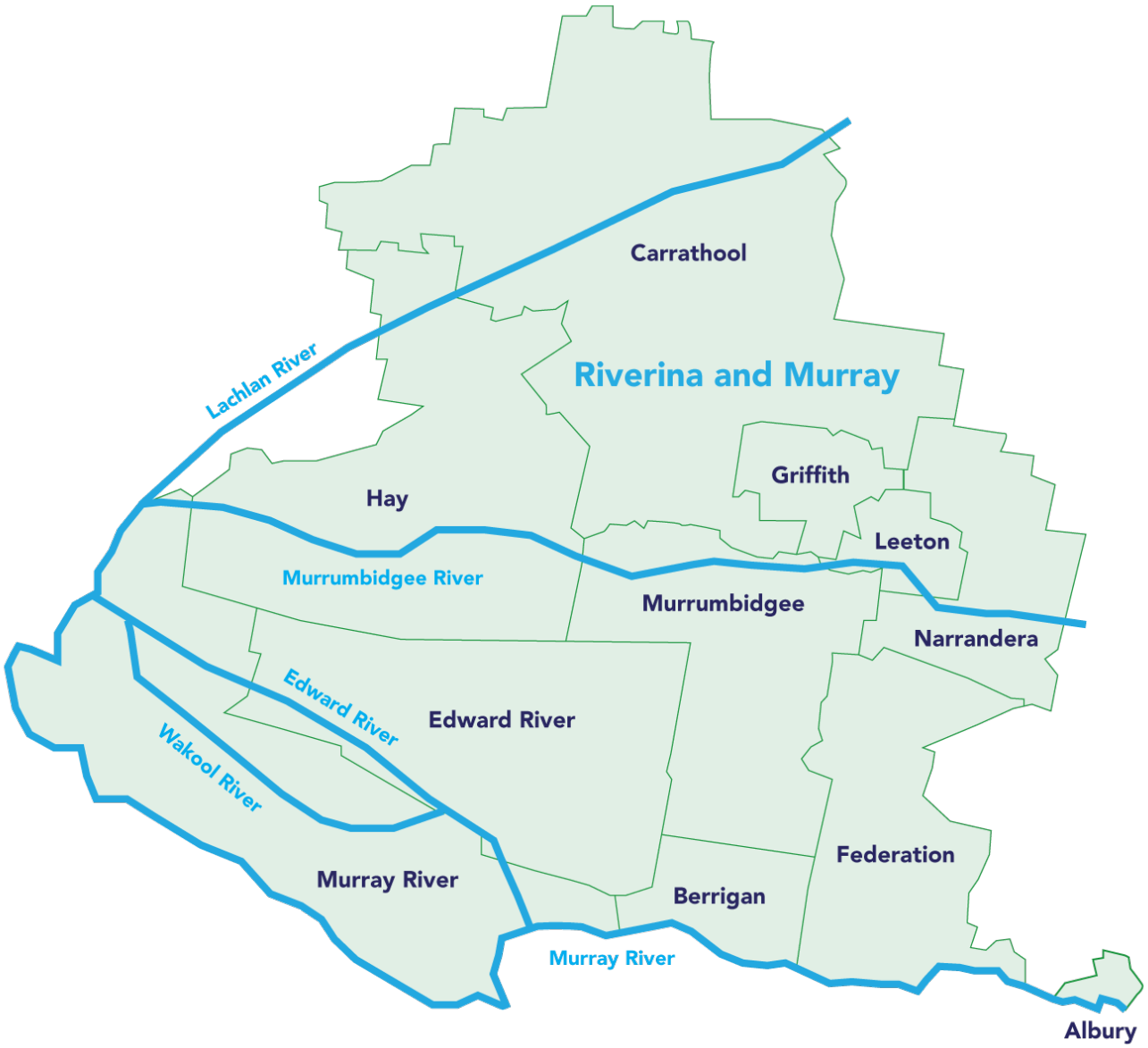


*Figure 1: Map of the RAMJO Area*

# Glossary of Abbreviations

| Acronym | Definition |
|---|---|
| **AC, DC** | Alternating & direct current |
| **ACCU** | Australian Carbon Credit Unit |
| **AEMC** | Australian Energy Market Commission |
| **AEMO** | Australian Energy Market Operator |
| **AER** | Australian Energy Regulator |
| **APRA** | Australian Prudential Regulatory Authority |
| **ASIC** | Australian Securities and Investment Commission |
| **B20, B50** | Diesel blends with 20% and 50% biodiesel |
| **BASIX** | Building Sustainability Index |
| **BAU** | Business-as-usual |
| **BCA** | Building Code of Australia |
| **BEEC** | Building Energy Efficiency Certificate |
| **BESS** | Battery Energy Storage System |
| **BMS** | Building Management System |
| **BEV** | Battery electric vehicle |
| **CCF** | Climate Change Fund |
| **CFL** | Compact fluorescent |
| **COP** | Coefficient of performance (refrigeration) |
| **COP21** | Conference of the Parties in Paris at which the Paris Agreement was reached |
| **CO2-e** | Carbon Dioxide Equivalent |
| **CPP** | Cities Power Partnership |
| **CPRS** | Australia's Carbon Pollution Reduction Scheme |
| **CSP** | Community Strategic Plan |
| **C4CE** | Coalition for Community Energy |
| **DPIE** | NSW Department of Planning, Industry and Environment |
| **EPA** | Environmental Protection Authority |
| **ERF** | Emissions Reduction Fund |
| **ESA** | Energy Supply Agreement (alternative name for Power Purchase Agreement) |
| **ESB** | Energy Security Board |
| **ESC** | Energy Saving Certificates |
| **ESS NSW** | Energy Savings Scheme |
| **EV** | Electric Vehicle |
| **FGA** | FG Advisory (Consultancy Firm) |
| **FiT** | Feed-in-tariff |
| **GHG** | Greenhouse Gas |
| **HVAC** | Heating, ventilation, and air conditioning |
| **ICE** | Internal combustion engine |

| Acronym | Definition |
|---|---|
| **ICLEI** | Local Governments for Sustainability |
| **IPCC** | Intergovernmental Panel on Climate Change |
| **JOs** | Joint Organisations |
| **kWh, MWh, GWh** | Units of energy – usually used for electricity |
| **cc** | Light Emitting Diode (lighting technology) |
| **LGC** | Large-scale Generation Certificate |
| **MJ, GJ** | Units of energy – usually used for gas |
| **LGA** | Local Government Areas |
| **LSBS** | Large Scale Battery Storage |
| **LPG** | Liquefied Petroleum Gas |
| **NABERS** | National Australian Built Environment Rating System |
| **NCC** | National Construction Code |
| **NEM** | National Electricity Market |
| **NSW** | New South Wales |
| **OEH** | Office of Environment and Heritage |
| **O&M** | Operation and maintenance |
| **P2P** | Peer to Peer trading of renewable energy |
| **PHEV** | Plug-in hybrid electric vehicle |
| **PiLoR** | Payment in Lieu of Rates |
| **PO** | Procurement Officer |
| **PPA** | Power Purchase Agreement (Alternative name for Energy Supply Agreement) |
| **PV** | Solar photovoltaic technology |
| **RAMJO** | Riverina and Murray Joint Organisation |
| **REF** | Revolving Energy Fund |
| **REROC** | Riverina Eastern Regional Organisation of Councils |
| **RES** | Regional Energy Strategy |
| **REZs** | Renewable Energy Zones |
| **RFQ** | Request for Quotation |
| **RET** | Australia's Renewable Energy Target |
| **ROI** | Return on Investment |
| **S1** | Scope 1 greenhouse gas emissions, from combustion of fuel at your facilities |
| **S2** | Scope 2 greenhouse gas emissions, caused by consuming electricity |
| **S3** | Scope 3 greenhouse gas emissions, indirect emissions upstream and downstream of your business |
| **SCC** | Sustainable Councils and Communities |
| **SR15** | IPCC Special Report on Global Warming of 1.5$^{o}$C |
| **SRES** | Small-scale Renewable Energy Scheme |
| **SPS** | Sewer Pumping Station |
| **STC** | Small-Scale Technology Certificates |
| **STP** | Sewerage Treatment Plant |

| Acronym | Definition |
|---|---|
| **TES** | Thermal Energy Storage |
| **VFD, VSD** | Variable Frequency Drive / Speed Drive |
| **VPPs** | Virtual Power Plants |
| **W, kW, MW** | Units of power – usually used for electricity |
| **WTP** | Water Treatment Plant |

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## Tables

**Figures**

# Foreword by Energy Sub-Committee Chair

In developing and adopting its statement of strategic regional priorities the Board of RAMJO recognised that affordable and clean energy was vital to the region's economic prosperity and environmental sustainability.

This strategy discusses key challenges facing the region and has been developed in close consultation with the member Councils and their communities. Faced with aging infrastructure, unreliable supply, a genuine lack of natural gas infrastructure and increasing energy costs the strategy establishes a framework for the future.

I acknowledge the leadership of the NSW State Government and in particular the team from the Department of Planning and Environment Sustainable Councils who have worked hand in hand with the working party and the member Councils to firstly identify opportunities and secondly to develop potential solutions to those issues.

This strategy will guide RAMJO, and its member Councils in the transition to a future founded in reduced emissions and sustainable and affordable operations.

**George Cowan**

General Manager Narrandera Shire Council / Chair, RAMJO Energy Sub-Committee

# Executive Summary

The Riverina and Murray Joint Organisation (RAMJO) is a collective of eleven regional and rural Councils across the Riverina and Murray Region of Southern New South Wales. This Regional Energy Strategy (RES) identifies actions that can be undertaken by RAMJO in collaboration with Councils and in alignment with the policies of the Government of NSW to reduce energy use, reduce costs, take advantage of the renewable energy changes underway and position the Councils to take advantage of emerging opportunities.

The RAMJO RES builds on and complements the work that individual councils have been doing around energy for some years. It does not duplicate this work but aims to identify ways to make it easier for member councils to make efficient use of what are often constrained time, staff, and financial resources. Workshops and meetings identified activities that RAMJO could undertake which would assist Councils.

The RES also builds on energy audits of council activities by external consultants, funded by the NSW government. These energy audits identified activities that could be taken by Councils to reduce both their energy costs, and emissions These reports have identified significant potential savings for individual Councils. Activities were costed and estimates of payback periods made.

Actions identified which had a payback period of 5 years or less are included, with a summary of total of cost and annual savings. Typically, the reports (from two different consultancy firms) have included:

- Energy efficiency initiatives/load shifting
- Purchase renewable energy power plan (not costed)
- Behind the meter solar
- Lighting upgrades
- Variable Speed Pump Control
- Voltage optimisation

The following table combines the costs and annualised savings for each of the above areas across the participating Councils (for payback period of five years or less).

*Table 1: Annualised savings with payback period of five years or less*

| Activity | Estimated cost | Annual savings |
|---|---|---|
| Energy efficiency/Load shifting | $88,011 | $124,481 |
| Behind the meter solar | $1,583,866 | $436,138 |
| Lighting upgrades | $111,130 | $42,922 |
| Variable Speed Pump Control | $38,000 | $9,377 |
| Voltage optimisation | $27,500 | $5,895 |
| **Total** | **$1,848,507** | **$618,813** |

The RES recognises the sudden shifts in context since the audits were completed. This includes the suspension of the electricity market in June 2022, threats of widespread and sudden blackouts in NSW, significant spikes in the price of natural gas and electricity brought about in part from the war in Ukraine, and the establishment of national legislated goals for the reduction in greenhouse gases. There has also been an accelerated withdrawal of coal fired electricity generation in NSW, major investments in renewable energy and transmission lines, and policies to increase the take-up of electric vehicles and hydrogen transport.

The Regional Energy Strategy aims to position RAMJO and member Councils to be proactive in identifying these challenges and taking advantage of the opportunities that are also emerging.

The following table provides an overview of the recommendations for this Regional Energy Strategy. The recommendations are clustered in five areas: Stationary Energy; Transport; Increasing Capacity; Advocacy and Monitoring and Evaluation. The full list of recommendations including the reasons for the recommendations and measures of success is available in the section Recommendations. An assessment of Risks, Costs and Benefits for each recommendation is also here.

*Table 2: Overview of recommendations*

**Part A: Stationary Energy**

| Action | Measure of Success |
|---|---|
| **1. Identify and switch to lower cost energy providers** | |
| 1.1 RAMJO to facilitate wherever appropriate a switch of small scale sites to Shell Contract. | 80% of eligible sites transferred by February 2023. |
| 1.2 Working with Councils identify potential partners to undertake Tariff reviews for sites. | 60% of participating Councils complete tariff review by June 2023. |
| **2. Collaborate on purchasing and procurement across the RAMJO Region** | |
| 2.1 RAMJO to employ an Operational Project Manager (OPM) to assist in implementing the Regional Energy Strategy and other sustainability matters. The role to include developing Regional procurement and | Funding obtained for employment of RAMJO Operational Project Manager.<br><br>RAMJO Operational Project Manager employed by March 2023. |

| Action | Measure of Success |
|---|---|
| purchasing and to identify opportunities for regional procurement outside of energy related matters. | |
| 2.2 RAMJO to lead the establishment of a Power Purchasing Agreement/Energy Supply Agreement within RAMJO area, on an opt in basis with options to include other interested Councils. | Agreement with participating RAMJO Councils on parameters for ESA by August 2023. |
| 2.3 Assist Councils in developing and accessing RFQs to identify the feasibility and possible opportunities for bulk buy of high efficiency light bulbs for Council premises. | Feasibility of a bulk buy investigated and decision about whether to proceed by June 2023. |
| 2.4 Assist Councils in developing and assessing RFQs for the installation of efficient HVAC systems where required. | Guidance sheets identified or developed if existing guidance is not available by April 2023. |
| 2.5 Assist in the development and implementation of best practice procurement policies that incorporate Social and Sustainability Procurement elements. | A Guide to best practice procurement policies identified or developed for use by Councils. |
| **3. Reduce barriers to increasing efficiency** | |
| 3.1 Identify funding sources and project briefs for installation of smart meters e.g. on bore pumps and other equipment to assist with load shifting. | Smart meters installed on pump equipment. |
| 3.2 Smart meters installed on buildings owned and managed by Councils. | Smart meters installed on 80% of eligible buildings by December 2024. |
| 3.3 Provide assistance with Pools which can be very large consumers of energy. | Provide access to guides that are being developed. Host training sessions as appropriate. |
| **4. Councils expanding renewable energy generation** | |
| 4.1 Develop expertise and provide assistance with development of Mid-scale solar. | Identify priority locations and options for Council owned Mid-scale solar by December 2023. |
| 4.2 Provide assistance and advice around Ground mounted solar or floating solar systems at Sewage Treatment Plants (STPs) and Water Treatment Plants (WTPs), including use of NSW Government tools. | Confirmation of potential sites for solar installations for STP and WTP across all Councils by December 2023. |
| 4.3 Collaborate with Councils with reduced energy security and supply to identify | Issues paper including options for Councils experiencing reduced energy security and supply |

| Action | Measure of Success |
|---|---|
| opportunities and potential funding to increase both using renewable technologies and storage. | and identifying potential funding sources by December 2023. |
| **5. Be prepared and identify opportunities for funding and collaboration** | |
| 5.1 RAMJO develop a Transport Strategy including EV for fleet vehicles, associated infrastructure and heavy vehicles and equipment. | Transport Strategy adopted by RAMJO Board by December 2023. |
| 5.2 RAMJO in collaboration with NSW Government identify preferred locations for EV Charging stations for Council fleets in participating Councils. | Preferred locations identified and reports made available to participating Councils by December 2023. |
| 5.3 RAMJO in collaboration with NSW Government identify preferred locations for EV Charging stations for destination travel to highlight tourism. | Preferred locations identified and reports made available to participating Councils by December 2022. |
| 5.4 RAMJO monitor developments in hydrogen for transport and provide regular reports to the Board and RAMJO Energy sub-committee about relevant initiatives. | Reports provided to RAMJO Board on at least an annual basis. |
| 5.5 RAMJO monitor developments in bioenergy and provide updates to member Councils and provide regular reports to the Board and RAMJO Energy sub-committee about relevant initiatives. | Reports provided to RAMJO Board on at least an annual basis. |
| 5.6 RAMJO develop a series of RAMJO/Council plans in collaboration with participating Councils to access potential external funding for transport using EV, hydrogen or bioenergy. | Templates and first 5 project outlines developed by February 2023. |
| 5.7 RAMJO prepare an issues and options paper drawing on (for example) recommendations 5.1, 5.2 and 5.6. | Issues and options Paper developed by August 2023. |
| **6. Increasing Capacity** | |
| 6.1 Working with others identify training opportunities for understanding emerging financial opportunities through the carbon market. | Training initiatives underway in three Councils by March 2023. |
| **7. Advocacy and research** | |

| Action | Measure of Success |
|---|---|
| 7.1 RAMJO maintain a watching brief and seek updates on emerging policy shifts at the State and National level that may impact RAMJO Councils particularly:<br>7.1.1 Renewable Energy transition<br>7.1.2 Rewiring the Nation<br>7.1.3 Transition lines<br>7.1.4 Renewable Energy Zones<br>7.1.5 Bulk buying price of electricity. | RAMJO and Councils understand and take advantage of emerging opportunities and reduce potential harm for communities.<br>RAMJO with Councils act to identify and obtain financial advantages for Councils and communities from investments in renewable energy. |
| 7.2 RAMJO collaborate with other JOs about ways for local communities and Councils to obtain financial, social and employment benefits from the shift to renewable energy. | Have a conference or workshop series to highlight lessons learnt and showcase success stories for councils across NSW by February 2024. |
| 7.3 RAMJO work with other JOS and the NSW Government to quantify the flow of money related to energy in and out of the region. | Confirm parameters of research and identify funds by July 2023. |
| **8. Monitoring and Evaluation** | |
| 8.1 Help establish Emissions Benchmarks – Tracking progress to Net Zero or use existing models. | Benchmark established and initial report available by June 2023.<br>Annual updates made available. |

# Introduction

This Regional Energy Strategy was initiated by the Government of New South Wales (NSW) and the Riverina and Murray Joint Organisation (RAMJO) in 2020. RAMJO is a collective of eleven regional and rural Councils across the Riverina and Murray Region of Southern New South Wales. It covers an area of 72,724 square kilometres and has a population of 151,861 people.

## What is included in this Regional Energy Strategy

This Regional Energy Strategy (RES) identifies actions that can be undertaken by Riverina and Murray Joint Organisation (RAMJO) in collaboration with Councils and in alignment with the policies of the Government of NSW. In the first instance the focus is on the activities of local government and does not look at community activities.

This RES builds on the Energy Strategic Goals established by RAMJO. These goals were:

- A shared Strategy and a shared Implementation and Resourcing Plan (I&R Plan) for Energy Security in the region.
- Increased funding and development of local and regional energy infrastructure
- Improved energy access and transmission (extraction and feeding into the grid)
- Increased local generation of clean energy to become more self-reliant AND improved value for money
- Lack of energy supply is no longer viewed as a barrier to industry investment and growth
- Regional energy security

Since the Strategic Goals were established the energy landscape has shifted enormously. These changes and opportunities that are becoming evident are included as background within the RES and has also influenced the recommendations.

## How was this developed?

The approach for the Regional Energy Strategy was developed with consultation with member Councils with support from technical experts and from staff within the NSW State Government. The NSW State Government has been a significant partner in the development of this initiative. Lisa Millar, Simon Wallace-Pannell and Catherine Semmler have been active partners within the Project Control Group. The State Government has also provided funding for the recruitment of consultants and for the development of tools that can now be used by Councils. The high level framework that was developed in 2021 is shown below. While it has helped shape the project, the results of the Audits and more recent conversations have led to refinements.

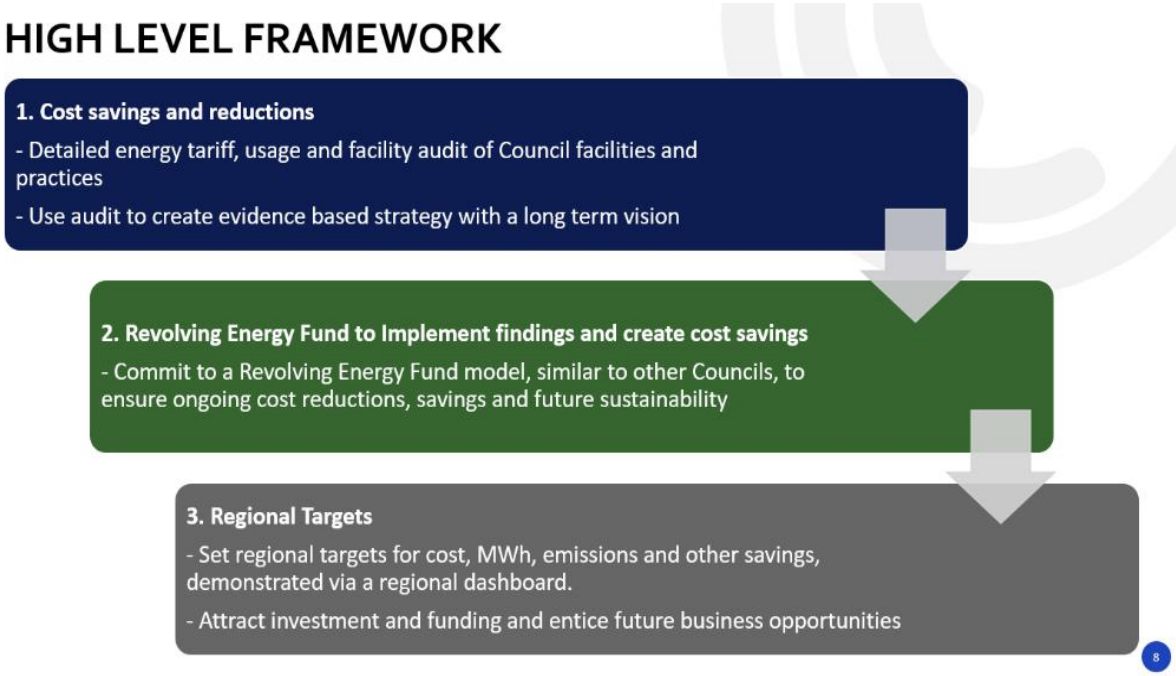


*Figure 2: High Level Framework for the Energy Initiative*

The NSW Government's Sustainable Councils (SC) program has been instrumental in providing funds to implement projects that have allowed participating councils to identify cost savings and reductions. From 2020 to late-2022 the SC program has provided $453,711 to Councils, an average of over $50,000 to each Council.

Stages of the development of this Strategy have included:

- Initial survey by RAMJO of participating Councils.
- Energy audits of council activities by external consultants.
- Workshops held with individual council staff.
- Analysis of the outcomes of the audits and strategies developed for individual councils.
- Workshops for collection of councils.
- Sharing of information with Council staff.
- Provision of guidelines developed by the State Government to participating councils.
- Provision for training sessions for issues identified by councils.
- Identifying areas of common concern and working to provide "cheat sheets" so information is shared across Councils.
- Writing of the Strategy and review by participating Council staff.

## Adding Value

The RAMJO RES builds on and complements the work that individual councils have been doing around energy for some years. It does not duplicate this work but aims to identify ways to make it easier for member councils to make efficient use of what are often constrained time, staff, and financial resources.

## Expanding the Opportunities

Consultants were engaged to undertake energy audits of the stationary energy consumed by Councils in their own operations. The briefs developed did not ask for a review of transport energy usage or other energy consumption. In a number of cases, the reports flagged opportunities around

transport energy and infrastructure. These have also been identified in the subsequent conversations with Council staff. A separate report (Review of Energy Plans) examines each of the audits and draws out the activities for each participating Council with a payback of less than five years[1].

Since the audits were completed and energy plans or strategies developed for individual Councils, there has been an unexpected increase in energy costs, warnings of potential rolling blackouts or brownouts, and issues around supply chains. In addition, there has been a heightened awareness of the impacts of disasters from weather impacts, fire, and flooding. Awareness of the impacts of heat waves as a human health emergency has also increased. These are outlined in more detail in the Context section below.

As such, this Regional Energy Strategy where possible identifies co-benefits that can help in identifying priority actions.

An example of looking at co-benefits is making decisions around adding solar energy and/or batteries to a location. At Berrigan, the report from consultants identified a range of potential sites for installing solar energy and quantified costs and payback periods[2]. However these calculations did not consider the impact of blackouts at very short notice as was threatened in the energy crisis in 2022. If Councils decide they wish to reduce the risk of blackouts on the management of sewage treatment plants than the priority for this activity shifts upwards. It may also increase the priority for seeking grant funding. Appendix 1 provides an example of a matrix to help with priority setting for projects.

Table 3 Summarises the projects undertaken in the eighteen months to December 2022.

*Table 3: Projects undertaken in Councils in the last eighteen months*

| Project | Councils | # Projects |
|---|---|---|
| Energy Audit by external consultants | Berrigan, Edward River, Federation, Hay, Leeton, Murray River, Murrumbidgee, Narrandera. | 8 |
| Energy Strategy undertaken | Berrigan, Edward River, Federation, Hay, Leeton, Murray River, Murrumbidgee, Narrandera. | 8 |
| Installation of solar energy | Albury, Murray River, Leeton, Hay, Griffith | 5 |
| Tariff reviews | Albury, Leeton | 2 |
| Identification of EV charging station locations | Albury, Narrandera, Leeton, Carrathool, Hay, Murray River, Edward River, Murrumbidgee, Berrigan, Federation, Griffith | 11 |
| Established Revolving Fund from savings | Edward River, Leeton, Narrandera | 3 |
| **Total Projects** | | **37** |

Source: Narelle Martin, RAMJO. 2022. Review of Energy Plans (unpublished)

Albury City Council has completed substantial work around energy for many years including audits of properties. They developed an energy plan in 2016 with the most recent plan developed for 2019-

[1] Narelle Martin, RAMJO, 2022. Review of Energy Plans

[2] Berrigan Shire Council: Energy Strategy p52

2023. Carrathool and Griffith shires have joined the program more recently and are now looking to engage consultants with funding from SCC to undertake energy audit.

All existing reports of energy audits that have been written by consultants were reviewed. Actions identified which had a payback period of 5 years or less are included, with a summary of total of cost and annual savings. Typically, the reports (from two different consultancy firms) have included:

- Energy efficiency initiatives/load shifting
- Purchase renewable energy power plan (not costed)
- Behind the meter solar
- Lighting upgrades
- Variable Speed Pump Control
- Voltage optimisation

The following table combines the costs and annualised savings for each of the above areas across the participating Councils (for payback period of five years or less).

*Table 4: Annualised savings with payback period of five years or less*

| Activity | Estimated cost | Annual savings |
|---|---|---|
| Energy efficiency/Load shifting | $88,011 | $124,481 |
| Behind the meter solar | $1,583,866 | $436,138 |
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| **Total** | **$1,848,507** | **$618,813** |

## Proposed RAMJO Led Activities

Discussion held with staff of Councils identified activities that could be led by RAMJO so that individual Councils would not need to replicate the expense, staff time and finances for each activity. The activities identified included:

1. Development of an Electric Vehicle Strategy (EV Strategy)
2. Establish a Power Purchase Agreement for participating RAMJO Councils
3. Develop expertise and provide assistance with development of Mid-scale solar
4. Provide assistance with Pools which can be very large consumers of energy
5. Assist in the development and implementation of Green procurement
6. Provide assistance and advice around Ground mounted solar at Sewage Treatment Plants (STPs) and Water Treatment Plants (WTPs)
7. Help establish Emissions Benchmarks – Tracking progress to Net Zero

The changes outlined in the context section has meant that some additional potential roles for RAMJO have been identified and are reflected in this strategy. These include:

- Providing assistance to member Councils through the engagement of a procurement resource.
- Acting as an advocate to the State Government in a range of related matters.
- Expanding the Electric Vehicle Strategy to a broader Transport Strategy and include implementation.

These are explored in more detail in later pages and are reflected in the recommendations. A closer examination of the reports and discussions with Council staff also highlights some additional finer grained issues and recommendations.

For example, Narrandera has three bore pumps. A recommendation arising from the audit was that there should be load shifting: "Implement load shifting of 5-8 pm load to off-peak hours for Bore 1, 2 and 3". There was no cost identified for this change, with an annual saving identified of $22,475.[3]" In discussions with staff at Narrandera this recommendation had not yet been implemented due to the need for staff to physically adjust the timing of the pumping, as well as monitoring the water flows and levels of storage. Investment in more electronic metering and control systems make load shifting more efficient and would capture the savings that had been identified. Narrandera Council is currently out to tender for a new telemetry system that will facilitate the increased level of control envisaged.

# A Shifting Context

## International Treaties and Goals

A number of the energy audits have outlined the international context for the move away from fossil fuels. The details are not repeated here but can be summarised as recognition of the need to reduce carbon dioxide emissions into the atmosphere to reduce the impact of climate change. The reports also identify other international drivers, including Sustainable Development Goals, the Paris Agreement and the Special Intergovernmental Panel on Climate Change (IPCC) report on 1.5 degree warming (SR 15). Australia has been a signatory to a number of these international treaties and goals. An example of the more detailed outline is available in the Narrandera Council Report which has been adopted by Council and is available at the website here[4].

## The Weight of Money

While much of the debate and discussion in the past around climate change has tended to focus on sustainability and environment aspects, there have also been significant changes and impetus in other arenas. Financial markets and insurance companies have adjusted their risk appetite. This can be in response to investor demand, policy changes at the national level and shifts in investment decisions. It is also reflected in regulatory changes. In Australia, The Australian Securities and Investment Commission (2018) identified that Climate Change is a material risk to business and is requiring companies and directors to outline to investors what their exposure is and what they are doing about it[5]. The Reserve Bank of Australia, the Insurance Council of Australia and the Australian Prudential Regulatory Authority (APRA) have all made it clear that business decisions must consider the impacts of climate change and identify how those risks can be managed.

In 2017, Geoff Summerhayes of the Australian Prudential Regulatory Authority (APRA) used the term "the weight of money". He said:

[3] 100% Renewables, 2020. Narrandera Shire Council Climate Action Strategy.

[4] 100% Renewables, Narrandera Shire Council Climate Action Strategy (Council Operations), pp 19-21.

[5] John Price, 2018, *Commissioner, Australian Securities and Investments Commission, Centre for Policy Development: Financing a Sustainable Economy, Sydney, Australia, 18 June 2018* Climate change | ASIC - Australian Securities and Investments Commission

> "The Sustainable Insurance Forum's view, which APRA shares, is that climate change and – here's the crucial bit – society's responses to it – are starting to affect the global economy… But what I can tell you with absolute certainty is that the transition to a low carbon economy is underway and moving quickly. The weight of money, pushed by commercial imperatives such as investment, innovation and reputational factors, is increasingly driving that shift, rather than scientists or policymakers."[6]

# Technological Shifts

## Stationary Energy

There have been significant shifts in technology around energy. Australia has the largest uptake of roof top solar energy in the world. The proportion of stationary energy such as wind and solar has increased across Australia so that in South Australia, for example, the State ran for 156 hours in January 2022 on renewable energy[7]. Hydrogen energy storage is also under development. The Smart Energy Council has established Hydrogen Australia to advocate for the increased understanding and expansion of hydrogen for energy storage[8].

The NSW government has established ambitious goals to expand renewable energy and reduce emissions through the establishment of several policies. These include:

**Net Zero Plan Stage 1:2020-2050**. This outlines the State's objective to deliver a 50% cut in emissions in 2030 compared to 2005 levels. The plan will support a range of initiatives.

**NSW Electricity Strategy**. The strategy responds to the aging of traditional generators, the congestion of transmission systems and increasing electricity prices. It looks to build a new affordable and reliable energy system.

**Electricity Infrastructure roadmap**. This roadmap coordinates investment in transmission, generation, storage and firming infrastructure as ageing coal fired generation plants retire. It Roadmap looks to attract up to $32 billion in private investment for regional energy infrastructure by 2030.

**5 Renewable Energy Zones (REZs)**. These will group new wind and solar power generation into locations where it can be efficiently stored and transmitted across NSW.

**NSW Electric Vehicles Strategy**. With an investment of $595 million the Strategy is intended to increase EV sales to 52% by 2030-31 and help NSW achieve net-zero emissions by 2050.

**Primary Industries Productivity and Abatement Program**. $125 million will support farmers and land managers across the State to reduce their emissions, improve their carbon management and enhance biodiversity on their land alongside production, as well as supporting the sector to increase revenue.

**Net Zero Industry and Innovation program**. In partnership with the Victorian Government this program is to establish Australia's first hydrogen refuelling corridor along the Hume Highway. In February 2022 it was expanded to help build the State's clean manufacturing base.

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[6] Geoff Summerhayes, APRA. 2017.The weight of money: A business case for climate risk resilience. Speech to Centre for Policy Development, 29 November 2017.

[7] Sophie Varrath, South Australia sets smashing new renewables record in final days of 2021, RenewEconomy.

[8] Hydrogen Australia - Smart Energy Council

Other initiatives include the establishment of **EnergyCo NSW** to co-ordinate investment in Renewable Energy Zones across the State, and **Accelerating Net Zero Buildings** to boost non-residential buildings towards net zero.

More details of these policies and new organisations are included in **Appendix 2.**

## Battery Technology

The technology and usage of batteries has rapidly evolved. In addition to their use in Electric vehicles, batteries have become important in stabilizing the grid as new solar and wind energy sources are being constructed. "For example, a large number of batteries installed together, known as grid-scale or large-scale battery storage (LSBS), can act as a large-scale power generator connected into the electricity transmission."[9]

> "Coupling batteries with renewable energy generation allows that energy to be stored during times of low demand and released (or dispatched) at times of peak demand.
>
> Unlike many other forms of energy storage and generation, batteries are particularly valuable because they provide flexibility. They can respond faster than other energy storage or generation technologies, and help maintain grid stability by turning on and off in fractions of a second."[10]

The first grid scale battery - the Hornsdale Power reserve - was selected by the South Australian Government following the September 2016 state-wide blackout which left South Australia without power. Since then large scale battery installations have expanded.

Solar and wind energy combined with batteries can provide reliable, flexible and low emissions energy. In Western Australia, these have been used as the technology of choice in areas with long distances at the fringes of the grid to provide stable energy. They may also be cheaper to install compared with the cost of poles and wires, as well as reducing maintenance costs for maintaining the extended grid and less vulnerability during fires.

The recent energy crisis and market suspension of 15 June 2022 was described as far worse than the South Australian blackout of 2016 by the Australian Energy Market Operator (AEMO).

The head of AEMO, Mr Westerman said "it was clear that the best way for Australia to relieve the price spikes in the wholesale electricity market over the longer term is to break the dependency between commodity prices and electricity prices. And that is, of course, moving to renewable generation where the fuel is our sun, wind and water," he said. The main lesson from the energy crisis has been the need to accelerate the transition to renewables…"[11]

## Closure of Coal Fired Power Stations

While renewable energy is expanding rapidly traditional sources of electricity - coal power stations - are closing more rapidly than anticipated. This is a combination of an aged fleet of power stations, increasing unreliability, and the changing efficiency of renewable energy reducing the profitability of coal-based power stations.

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[9] Australian Renewable Energy Agency (ARENA), What is battery storage? - Australian Renewable Energy Agency (ARENA)

[10] Australian Renewable Energy Agency (ARENA), What is battery storage? - Australian Renewable Energy Agency (ARENA)

[11] Giles Parkinson, 'AEMO's Westerman says energy crisis more challenging than South Australia blackout' https://reneweconomy.com.au/aemos-westerman-says-energy-crisis-more-challenging-than-south-australia-blackout/

The 2021-22 'GenCost' report confirms past years' findings that wind and solar are the cheapest source of electricity generation and storage in Australia, even when considering additional integration costs arising due to the variable output of renewables, such as energy storage and transmission. Renewables remain the cheapest new-build electricity generation option in Australia, although inflation and supply chain disruptions will likely put cost reductions on hold for the next year.[12]

The practical outcome of the reducing costs of renewable energy is the more rapid closure of coal fired power stations. In February 2022 Origin Energy gave the Australian Energy Market Operator (AEMO) notice that will allow it to shut the 2,880MW black coal generator Eraring from August 2025. The station is Australia's largest power station and accounts for approximately 25% of New South Wales' power requirements. The company plans to install a large-scale battery on the Eraring site[13].

The company said its decision reflected "the rapidly changing conditions in the national electricity market, which are increasingly not well suited to traditional baseload power stations".

It is the latest in a series of early coal plant closure announcements prompted by the rapid rise of cheaper renewable energy, which reached more than 30% of grid generation last year and is forecast to hit at least 69% by 2030.

## Transport and Supply Chains: Risk and Opportunities

In Australia by 2030 on current policy settings petroleum emissions will be a considerably larger source of emissions than electricity generation. Transport accounts for 75% of total petroleum consumption with most of the rest coming from mining (14%) and agriculture (5%)[14].

Fuel supplies are vulnerable. Australia is a member of the International Energy Agency (IEA) and, as part of this, Australia has an obligation to maintain stocks equivalent to 90 days of our annual net imports. Australia has one of the lowest reserves of fuel in storage – in 2018 Australia held 53 days of reserve (up from 45 days from 2017) and aims to be compliant with the IEA standard by 2026[15]. Research commissioned by the Department of Defence warned that 90% of Australia's fuel imports would be at risk amid conflict in the South China Sea. The research stated that Australia should diversify import sources, increase its local refining capacity, reduce its dependence on fossil fuels; increase strategic research; and educate and prepare the population for possible shortages[16].

A forced reduction in fuels would have major consequences for RAMJO Councils and communities. The region covers a large geographical area with a high dependence on personal vehicles to gain access to services and goods. In addition, back-up systems during power outages and emergencies for hospitals and other key infrastructure often depends on diesel fuel. The invasion by Russia into Ukraine has led to resultant disruption in energy systems in Europe and elsewhere, and increased bowser prices in Australia. COVID has also had an impact on supply chains, with the global supply

[12] CSIRO, GenCost 2021-22, GenCost: annual electricity cost estimates for Australia - CSIRO

[13] Origin Energy, Eraring power station - Origin Energy

[14] Hugh Saddler, National Energy Emissions Audit February/March 2021 May 8, 2021. https://australiainstitute.org.au/report/national-energy-emissions-audit/

[15] Australian Government Department of the Environment and Energy, Liquid Fuel Security Review. Interim report April 2019. https://www.energy.gov.au/sites/default/files/liquid-fuel-security-review-interim-report.pdf

[16] Richard Oloruntoba, Booi Kam, Hong-Oanh Nguyen, Matthew Warren, Prem Chhetri, Vinh Thai. "Conflict in the South China Sea threatens 90% of Australia's fuel imports: study Published: August 22, 2022

chains that we have largely taken for granted severely disrupted. These events have highlighted the vulnerability of supply lines.

RAMJO and its Councils can reduce its dependence on fossil fuels and potentially look to educate and prepare the population. Electric vehicle usage in Australia is far behind other countries. More models are likely to be made available at a lower price point in the wake of some of the recent Australian Government initiatives. Flagged approaches include introducing emissions standards for vehicles and looking at tax structure for electric vehicles. The NSW State Government also has strategies to increase the numbers of electric vehicles in the State. The Strategy is intended to increase EV sales to 52% by 2030–31 and help NSW achieve net-zero emissions by 2050[17].

Electric vehicles are also being investigated for use in Councils. The changes at both Federal and State level will increase the availability of electric vehicles while reducing costs. Planning fleet charging infrastructure can provide opportunities for significant long term cost savings by making necessary electrical provisions in advance. Well executed fleet charging is also critical to minimise the barriers to fleet transition as suitable and affordable EVs become available for Council use. Poorly planned or inadequate charging infrastructure will cause logistical challenges and delay the electrification of Council fleets.

For example, there are opportunities if a Council is constructing or renovating a depot. Even though Council may not be purchasing many EVs in the near future, installing underground conduits and oversizing electrical infrastructure can save hundreds of thousands of dollars in future upgrades[18].

An opportunity for RAMJO and other rural areas is the potential for alternative fuel sources, including biofuels. Organic waste from agriculture and food production can be converted to bioenergy. This can drive economic growth for regional communities and add income diversity. It also reduces the dependence of fossil fuels for transport with its accompanying supply risks[19].

Recommendations include developing a Transport Strategy including an Electric Vehicle Strategy.

# Drivers for a Regional Energy Strategy

## Cost Reduction

The foundation for this RES were the audits of Council energy use. These audits have been valuable in identifying how Councils can reduce their ongoing energy costs and change their mix of energy to include more renewable sources. The reports identified costs of various actions as well as the payback period for the investment. Cost reduction could be from activities that have no up-front investment costs, such as tariff reviews, changing the time of use of equipment, to activities with costs such as installation of solar panels and batteries and installation of smart meters.

Decisions on purchase of equipment can tend to focus on the initial purchase price with a view of reducing the cost of a project. However the running costs of equipment may have a major impact on the budget. For example, having pumps correctly sized with variable speeds to match the load can significantly reduce on-going costs. It is important for Councils (and other businesses) to consider the whole-of-life costs of investments.

[17] For further details see https://www.environment.nsw.gov.au/topics/climate-change/net-zero-plan/electric-vehicle-strategy

[18] Information provided by Paul Darmanim, ChargeWorks by email 5/10/22.

[19] Mark Jonker, Helmont Energy, 'Australia's BioEnergy Opportunity', Energy and Innovation Conference, Wagga Wagga.

Another important activity for reducing costs is to reduce the amount of power consumed. For example, turning off equipment when it is not needed, and turning off lights when there is no-one in the office are behavioural changes that can reduce costs. Details of the savings identified in the reports for a payback period of less than five years are summarised in **Table 5.**

## Future Energy Security

RAMJO has identified the lack of energy availability in some Council areas as a barrier to development. Berrigan for example has noted that there are insufficient energy resources to have industry and development expand. This is a key resource that should be available to all communities.

Building energy security is also critical during adverse events. The 2019-20 fires in NSW and Victoria left communities without access to power for significant periods of time. This impacted telecommunications, hospital access, access to medicines, food and clean water. While some back-up diesel generators were able to be used or installed, the ability for communities to continue to function was severely impaired as the power lines and grids were burnt out. A number of these communities, with the support of their relative State governments, are looking at combinations such as solar power, batteries and mini-grids to provide islanded power during critical events. For example, in Towong Shire (Victoria) 'the Upper Murray Energy Resilience and Reliability project will move to shore up the region's electricity supply with a focus on energy nodes, community-scale batteries and hot water pump services.'[20] A second project 'Community Microgrids and Sustainable Energy Program' aims to deliver a simple microgrid to the town of Corryong using subsidised residential solar panels, batteries, and other distributed energy resources.[21]

Where generators are currently being used because of unreliable energy supplies then models such as solar panels and batteries used in Corryong and elsewhere may provide a cost efficient way to increase energy security and reduce emissions.

For industries requiring heat over 100 degrees Thermal Energy Storage (TES) may be a viable alternative to using gas. TES is being used by Mars, a major pet food producer in Wodonga, to reduce their gas consumption[22]. This type of solution may help business requiring high temperatures for example in food processing to set up in areas with otherwise insufficient electrical supply. The Wodonga TES system is being made by an Australian company, Graphite Energy, based at Lake Cargelligo in Central NSW.

Recommendation 4.3 provides an approach to address the lack of energy security and availability currently being experienced by some Councils.

## Expanding Economic Opportunities

The need for affordable and clean energy is important for both economic prosperity and environmental sustainability. The region is faced with several energy challenges including:

- Ageing infrastructure
- Gaps in infrastructure meaning demand outstrips supply (particularly for manufacturing growth)

[20] Towong Shire Community Recovery Newsletter, October 21, Edition 20. P 5 community-recovery-newsletter-edition-20-october-2021.pdf (towong.vic.gov.au)

[21] Towong Shire Community Recovery Newsletter, October 21, Edition 20. community-recovery-newsletter-edition-20-october-2021.pdf (towong.vic.gov.au)

[22] https://www.abc.net.au/news/2022-08-04/graphite-battery-will-be-first-commercial-thermal-energy-storage/101295350

- Generators are used in some areas because energy supplies are unreliable
- Lack of natural gas infrastructure
- Increasing energy costs and high costs of connecting to energy
- Pressure to be more environmentally friendly with renewable energy generation[23].

The opportunities that are now emerging include construction and development of more flexible and location based renewable energy generation and storage. There is a significant downward shift in costs of renewable technologies including solar and batteries while at the same the costs of fossil fuels, particularly gas, has increased rapidly with little sign of reverting to cheaper prices. Communities and industries have been using different combinations of technology to provide energy supply and increase reliability. Councils are also investing in renewable energy including solar and batteries to reduce their costs and, again, increase reliability. The audit reports that have been completed for Councils have identified further opportunities for Councils to reduce costs and emissions.

## Capturing Value for Local Economy Through Energy Transition

There are rapidly evolving issues around energy that may impact Council operations, services provided to the community, and economic development.

A recent example was the issue raised by one of the RAMJO Councils. This Council is within the South-West REZ. It also has an energy connect power line, and a new substation being built within the Council area. The Council is therefore being approached by solar and wind farms interested in new developments in the Council area. However there is not an easy mechanism for the Council to capture financial benefits from these potential developments. Methodology used in Victoria allows councils and electricity generators to negotiate payments in lieu of rates. The payment in lieu of rates (PiLoR) framework allows electricity generators to negotiate payments made to local councils[24]. In the RAMJO area economic benefits for the local communities have been achieved by negotiation between the Councils and the developers. These benefits include outcomes of employment and accommodation strategies and contributions to local community infrastructure and activities.

The General Manager of Murrumbidgee Council, Mr John Scarce, has identified a suite of issues and potential opportunities which he is concerned about and are reflected in more general terms in the recommendations for this RES.

"I am constantly trying to find ways to run an extension cord from the renewable energy sites to our towns. I am constantly trying to get the pricing methodology to reflect that it's generated on our door step so why do we need to pay so much for transmission and other things."[25] Mr Scarce and representatives and leaders from other Councils have identified interest in geothermal energy, the development of a biomass plant in the region, and hydrogen generation from renewable energy. Local government and communities may be active players in the generation of renewable energy, and capture the benefits of generating renewable energy, reducing dependence on fossil fuels and potentially developing alternative income streams for the community and Councils.

[23] RAMJO Website

[24] Government of Victoria, 2022. Payment in lieu of rates for electricity generators Payment in lieu of rates for electricity generators (energy.vic.gov.au)

[25] Mr John Scarce, General Manager of Murrumbidgee Shire Council, by email, 26 October 2022.

## A Proactive Approach to Reducing Potential Future Issues

In 2022 the NSW Department of Primary Industries issued an Issues Paper on Renewable Energy and Agriculture in NSW[26]. It sought input from the community on a range of issues around renewable energy and agriculture. Several of the areas which were canvassed in that paper have also been raised by the Board of RAMJO in 2020. While RAMJO Councils and communities noted the support for finding renewable sources of energy where possible, the issues raised by the Board included:

- The State government's planning strategy as it relates to solar farms
- A desire for clarification of how the incremental effect of multiple large scale solar farms within individual Council areas, or across RAMJO prime irrigated public land, will impact communities and economic output in the coming 25-30 years.
- How Voluntary Payment Agreements for large solar farms might allow more sharing of profits with the community. The Board noted that the majority of the profits are not currently returned to the community.
- The installation and decommissioning related waste. An example offered was the application of a large scale solar farm to a Council which would not be able to be managed at the local waste management facility and how this waste could be managed locally with financial compensation from the proponents to expand the waste management facilities. In addition what arrangements may be in place when large scale solar farms are decommissioned.
- How state Significant planning processes consider network capacity and connection matters with planned large scale solar farms27.

In 2022 a guide was produced for Local Government on Land Use Planning for Agriculture in Rural Land Use Strategies[28]. This document outlines key aspects that should be addressed in the preparation of a rural land strategy to ensure that agricultural land, resources and industries are adequately considered in the strategic planning framework[29]. Throughout this document there is no mention of how the rural land strategy should consider development of solar or wind farms. There is considerable information available in a separate suite of documents through the Department of Planning and Environment including a Large Scale Solar Energy Guideline[30]. The guideline notes:

> "Notwithstanding, a large portion (approximately 70%) of existing solar development is currently located outside REZs and continued development outside of the REZs will be required to support a transition to renewable energy. This guideline applies to large-scale solar energy projects both inside and outside the REZs."[31]

There is a role for RAMJO to be aware of how some of processes are emerging and co-ordinating input and advice for State processes that may have a direct impact on RAMJO Councils.

[26] NSW Department of Primary Industries, 2022. Renewable Energy and Agriculture in NSW. Review of the adequacy of the existing framework to manage issues and opportunities from the forecast growth in the renewable energy and agriculture sector in NSW.

[27] Riverina and Murray Joint Organisation, 2019. Solar Farm Briefing Paper (Unpublished)

[28] NSW Department of Primary Industries, 2022. Land Use Planning Planning for Agriculture in Rural Land Use Strategies

[29] NSW Department of Primary Industries, 2022. Land Use Planning Planning for Agriculture in Rural Land Use Strategies p8.

[30] NSW Department of and Environment, 2022. Large Scale Solar Energy Guideline Large-Scale Solar Energy Guideline 2022 (amazonaws.com)

[31] NSW Department of and Environment, 2022. Large Scale Solar Energy Guideline. P7

## Federal Government legislation on emission reductions.

For the first time in Australia legislation has been passed to cut greenhouse gas emissions to 43% below 2005 levels by 2030, and to reach net zero by 2050[32]. In a series of amendments the position of regional and rural communities was explicitly recognised and included in the legislation. These changes included:

- Expanding the list of eligible qualifications for appointment to the Climate Change Authority to ensure they have regional and rural development expertise
- An accountability mechanism requiring the minister to outline benefits for the regions as a result of the government's climate policies in the annual statement to parliament.
- Explicitly consider regions when setting new emission targets. The Climate Change Authority must advise the minister on the benefits a higher target would deliver to regional communities and the fiscal impacts of climate change on regional Australia33.

The recognition of regional and rural Australia in the legislation could mean greater access to opportunities, leverage and accountability for RAMJO and other Councils.

## Carbon Markets

There was not much discussion in the Energy Audits undertaken about the role of Councils and carbon markets. This is an area that may provide opportunities for Councils that would be worth exploring, particularly as a new source of revenue.

# Renewable Energy Zones

The NSW Government recently released a plan to establish “Energy Zones” across NSW to support a transition to a modern energy system.

The South-West REZ includes a number of RAMJO Councils The South-West REZ is expected to receive up to $2.8 billion in private investment by 2030. At its peak, this REZ is expected to support over 2,000 construction jobs in the region[34].

[32] Climate Change Bill 2022 and Consequential Climate Change (Consequential Amendments) Bill 2022 at Climate Change Bill 2022 – Parliament of Australia (aph.gov.au)
[33] Helen Haines, Regional Australia to benefit after Haines successfully amends Climate Change Bill at Regional Australia to benefit after Haines successfully amends Climate Change Bill - Helen Haines MP - Independent Federal Member for Indi
[34] EnergyCo NSW, South-West Renewable Energy Zone

## Indicative Geographical Area of South-West Renewable Energy Zone

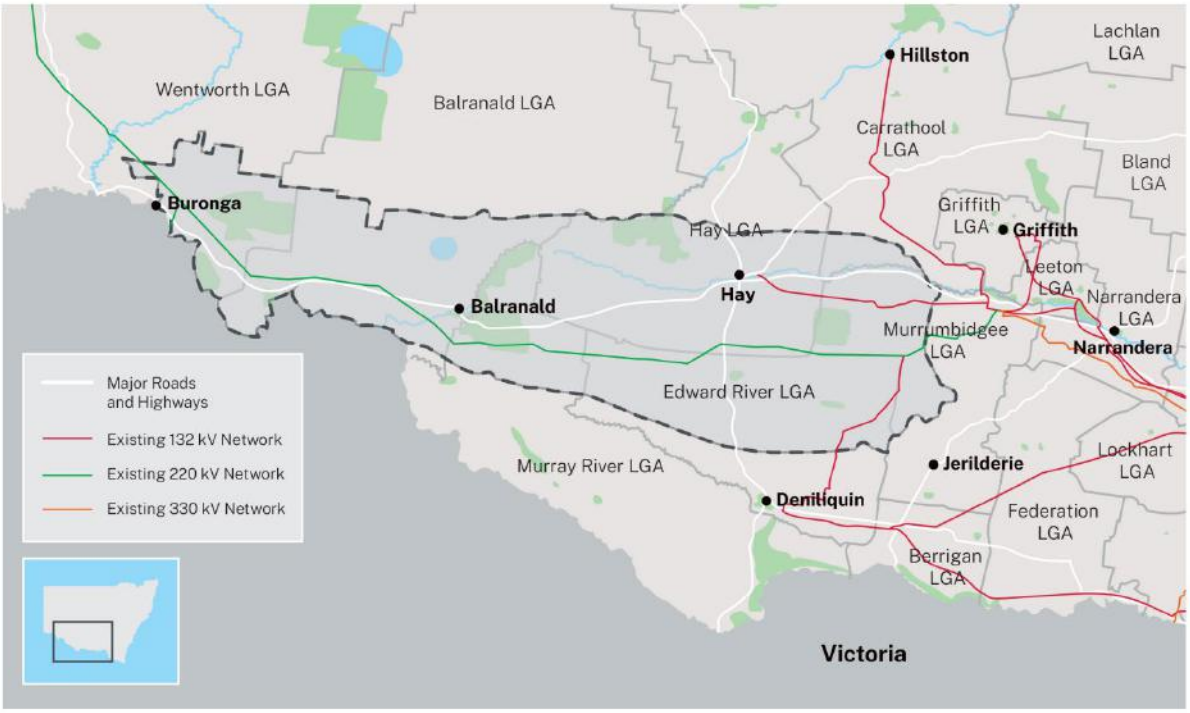


*Figure 3: Indicative Location of South-West Renewable Energy Zone*

Source: EnergyCo NSW at https://www.energyco.nsw.gov.au/index.php/renewable-energy-zones/southwest-renewable-energy-zone

EnergyCo has established the South-West REZ Regional Reference Group "to ensure that the REZ delivers meaningful, long-term benefits to local communities". This group includes regional stakeholders, including representatives of local councils, Aboriginal Land Councils and regional NSW government agencies[35]. However, it is unclear who are members of this group. EnergyCo also has statements about community benefit and has established a listening program: the program seeks to understand what people understand about REZs, the infrastructure required to power them and the long-term benefits they will provide to host communities and the people of NSW[36].

It is very important that the issues raised in this RES about sharing the benefits of renewable energy with local communities and capturing the economic opportunities with Councils, communities and businesses are addressed in a meaningful way. A raft of measures around REZ, solar farms, wind farms and transmission lines need to be developed and implemented in a collaborative way to ensure that these projects develop and keep social licence.

[35] South-West Renewable Energy Zone | EnergyCo NSW

[36] EnergyCo, https://www.energyco.nsw.gov.au/community/our-commitment-communities

# RAMJO Member Councils: Approaches in Energy Issues

In 2022 each member council identified the following directions in energy

*Table 5: RAMJO Member Councils approaches in Energy Issues*

| | |
|---|---|
| AlburyCity | • Complete monthly monitoring of electricity usage<br>• Complete annual electricity tariff reviews<br>• Investment in rooftop and ground mounted solar<br>• Albury Renewable Energy Hub. Solar panels and landfill gas plant generating approximately 11,200MWh annually<br>• Continuously investigating and implementing energy efficiency measures<br>• Community Energy Fund supporting energy efficiency and renewable energy<br>• Council committed to consume 100% renewable energy by 2025 |
| BERRIGAN SHIRE | • Significant tariff reviews, audits and usage changes to date<br>• Investment into rooftop solar<br>• Gains in efficiency already made<br>• Investigating capacity building in “end of line” townships such as Tocumwal to begin in 2023-2024<br>• Review of CSP is expected to focus on moving to more renewable energy sources |
| Carrathool Shire Council 1906 | • Carrathool Shire Council joined the energy initiative in 2022. |
| Edward River Council | • Council has had several energy audits. Council reviews the proposed projects on a case-by-case basis.<br>• Following these audits Council has installed solar panels on several sites, modified purchasing policy and committed to several projects in the coming years. |
| FEDERATION COUNCIL | • Council commitment to be electricity neutral by 2025 (for Council businesses – achieving this remains at risk)<br>• Existing significant solar infrastructure on Council civic centres, Water and Sewer treatment plants, other community buildings/facilities. Upgrades and new lights in areas such as walking tracks are done using stand-alone solar units.<br>• Focus to be cost neutral (generate enough to pay for what is used via infrastructure and usage charges) |
| Griffith city council ...love the lifestyle... | • Griffith City Council joined the energy initiative in 2022. |

| | |
|---|---|
| | • Hay Shire Council is continually trialling new technologies. The Council have installed solar streetlights, solar lights, solar bollards, solar pavers, and solar systems with batteries for buildings.<br>• Hay Shire Council is drafting energy saving and generating actions in their Circular Economy Strategy, a draft of which is due to be completed by end of October 2022. |
| | • Leeton Shire Council's Energy Master Plan was Adopted by Council in 2021.<br>• Several energy upgrades projects have been delivered with an initial focus on cost reduction.<br>• A total of 303.7kw of behind the meter solar has been installed or is in the process of being installed on council buildings and infrastructure.<br>• Energy tariff reviews have been completed seeing a substantial improvement in energy costs.<br>• Telemetry has been installed across Council's water, sewer and stormwater networks.<br>• Energy optimisation studies are being performed at several council sites to identify opportunities for energy enhancements on equipment. |
| | • Participating in the LGP tender for large sites<br>• Using State Government contract with Shell for small sites<br>• Undertaking complete audit of all usage sites and usage patterns<br>• Exploring EV charging stations in line with grant funding for internal use.<br>• Encouraging local businesses to take up the grants to set up EV charging stations on their premises<br>• Will be exploring renewable generation at identified sites.<br>• Supporting several renewable generation projects (grid supply) within the region. |
| | • Energy Strategy adopted by Council in July 2022<br>• Focus on cost-effective solar PV and energy efficiency opportunities at Council-operated sites<br>• Stay abreast of opportunities for battery energy storage systems<br>• Consider renewable energy PPAs<br>• Tariff review to be conducted |
| | • Energy Strategy adopted by Council in December 2020<br>• Target of 75% savings in greenhouse gas emissions from Council facilities by 2030<br>• A key focus is continued cost reduction and renewable energy investment<br>• Rolling investment fund established in 2021<br>• One large scale solar farm under construction and several in the planning phase |

# Stationary Energy, Transport and Landfills

Throughout many of the audits the bulk of the work and recommendations was related to stationary energy. Essentially, this is the energy use of buildings and equipment. For the latter, there was significant energy consumption by pumps and equipment related to sewage treatment plants (STP), water treatment plants (WTP) and in several cases, bore pumps.

However, energy use and the resultant emissions are also generated by transport, and from landfills.

Several audits also provided a breakdown of the emissions by Council. A snapshot of the different patterns of energy usage is included as Appendix 3.

*Table 6: Example of analysis of Carbon Footprint. Leeton Shire Council Carbon Footprint 2019, Energy Only.*

| | Emission source | Activity data | Units | Scope 1 t $CO_2$-e | Scope 2 t $CO_2$-e | Scope 3 t $CO_2$-e | Total | % |
|---|---|---|---|---|---|---|---|---|
| | Diesel for fleet | 263 | kL | 716 | | 37 | 752 | 24.0% |
| | Petrol for fleet | 10 | kL | 24 | | 1 | 25 | 0.8% |
| | Natural Gas | 210 | GJ | 11 | | 3 | 14 | 0.4% |
| | Electricity used in council assets | 1,838,739 | kWh | | 1,489 | 78 | 1,568 | 49.9% |
| | Electricity used by streetlighting | 868,853 | kWh | | | 782 | 782 | 24.9% |
| | Electricity use from solar PV | 184,877 | kWh | | | | 0 | 0.0% |
| | **TOTAL:** | | | **750** | **1,489** | **901** | **3,141** | **100.0%** |

Source: 100% Renewables, NSW DPIE: Sustainable Councils and Communities Leeton Shire Council Energy Masterplan Report, March 2021 p34.

## Transport Energy

The Energy Audits for Councils examined Transport Energy within some of the Council operations. When looked at, the quantities identified were for bulk supply of fuel, rather than looking at fuel consumed in fleets using fuel cards. Again, there was considerable variation in the quantities of diesel for fleet consumed as a percentage of the emissions. This ranged from 7.19% up to 35.1% of the total emissions identified from Council operations.

This RES has recommendations related to transport fuels. This includes developing an electric vehicle policy, investigating hydrogen fuels, and investigating bioenergy.

## Landfills

Landfills can be a major source of emissions. Three of the energy audits quantified the emissions. In those cases, landfill gases were contributing from 33.5% of total emissions up to 83.4% of total emissions of the Council operations.

Management of landfills are difficult and complicated. The NSW State Government has a few related policies. In rural areas there may be many small landfills that are widely distributed across the landscape. Changing landfill management can be expensive for Council, ratepayers, and industry.

RAMJO is currently (2022) developing a Regional Waste Management Plan which is addressing a suite of issues with waste management and landfills. Some options explored include the collection of organic waste which is converted to mulch, and capturing gases from landfill for electricity generation. As such, the management of landfills and emissions from landfills is not the focus of this Regional Energy Strategy.

# Building on Existing Work

All the RAMJO Councils have been involved in some activity to identify energy usage, identify savings, and change practices and or equipment. An excellent example of a successful energy project is the Southern Lights Street Lighting Project.

## Southern Lights Street Lighting Project

The Southern Lights Street Lighting Project is a collaborative initiative across RAMJO, the Canberra Region Joint Organisation, Central NSW Joint Organisation, REROC, Broken Hill, Balranald and Wentworth councils.

To date, more than 106,000 LED streetlights have been installed on residential and main roads across rural and regional NSW. In the Southern Lights NSW region, this includes over 50,000 LEDs installed to date (about 2/3 of all the lighting managed by Essential Energy across the Southern Lights NSW region).

Councils in the Southern Lights NSW region are already saving over $3.2 million a year in energy and maintenance costs for these lights. Energy and greenhouse gas emissions savings have been an average of 50% while improving lighting across the region[37].

## Installation of Solar Systems

Several RAMJO Councils have been active in installing solar systems on their own properties. This includes Albury City Council, Narrandera Shire Council, Griffith City Council and Hay Shire Council. The audit reports identified potential sites for additional solar systems and in cases provided indicative costs.

# Relationship with Other Policies and Legal Requirements

Many of the proposals in this RES have multiple benefits. The following policies and strategies should be considered as part of priority setting.

## Adverse Events plans

A number of Councils in NSW who were looking to access grant money were required to develop Adverse Events Plans. When these were developed Councils also identified projects to reduce the impacts and prepare communities. Where energy projects are to be developed or applications for funding are being made these plans may be used as evidence of the need for the project given a higher priority.

[37] From RAMJO website accessed 24/08/2022 at Southern Lights - RAMJO - Riverina & Murray Joint Organisation (nsw.gov.au)

## Climate Risk Strategies

Insurance companies in the past have required Councils to develop Climate Risk Strategies. Insurance Companies may have assisted Councils in the first instance to develop the Climate Risk Strategies. These Strategies are still in play. Orange City Council has undertaken a pilot looking at this. The State Government is preparing a tool kit for identifying climate risk for Councils based on a risk assessment process.

## Heat Strategies

In discussions with the Project Control Team the issue of the impact of heat was noted. In Victoria the deaths from major heatwaves in 2009 exceeded the deaths of people in the Black Saturday bushfires of that year. There were an estimated 374 excess deaths from heat waves in 2019 compared to 173 deaths in the bushfires[38]. In Victoria, all Councils are required to have a Heat Management Strategy or Wellbeing Strategy to protect their staff and community[39]. While there is not currently a Heat Strategy requirement for Councils in NSW the heat waves of the summer of 2019-2020 period had severe impacts of the community. The NSW government has an approach to heat waves outlined through the webinar https://www.climatechange.environment.nsw.gov.au/heat-risks-and-opportunities-adaptnsw-webinar-2021 Further information on the impact of heat waves produced by the NSW Government is available here.

## Emission Reduction Policies

The NSW Government has committed to a number of new policies that are to reduce the greenhouse emissions for the State. A full list is included as Appendix 3. The Net Zero Plan will support a range of initiatives targeting energy, electric vehicles, hydrogen, primary industries, technology, built environment, carbon financing and organic waste.

It is noted that the State Government has introduced (in 2019) an Energy Safeguard mechanism which includes "fuel switching activities that reduce the consumption of grid connected and non-grid connected energy. This includes switching from grid connected gas and electricity, or onsite fuels such as diesel, to alternatives like biogas, green hydrogen or solar thermal. Energy saving or fuel switching activities generate energy savings certificates, which can be sold to energy retailers to meet a regulatory obligation. The scheme aims to meet energy savings targets that increase gradually from 8.5% in 2021 to 13% by 2030."[40] It is unclear whether this safeguard mechanism will also apply to Local Government.

It is likely that more emphasis will be placed over time on monitoring and reporting carbon emissions with a view to identifying reductions in emissions from local government activities. This needs to be monitored by RAMJO in collaboration with its partners at the NSW Government.

[38] Department of Health and Human Services 2018a

[39] Municipal public health and wellbeing planning 2021–2025 Advice Note 1 August 2020 mphwp-2021-2025---advice-note-1---august2020---update.pdf (health.vic.gov.au)

[40] Department of Planning, Industry and Environment Net Zero Plan Stage 1: 2020–2030 Implementation Update P 14 https://www.environment.nsw.gov.au/research-and-publications/publications-search/net-zero-plan-stage-1-2020-30-implementation-update

# Recommendations

The following tables identify actions to assist in reducing energy use and increasing efficiencies for an initial 5 year period. The recommendations are grouped in five areas: Stationary Energy; Transportation; Increasing Capacity; Advocacy and Research; Monitoring and Evaluation

## Regional Procurement

Throughout discussions with RAMJO Councils it was clear that for many resources of time, money and staff are very limited. The ability to raise additional funds through rate increases is also limited. There is a role for RAMJO to be proactive in this area and engage a resource who can act on behalf of Council. This can be to procure goods and services that benefit from bulk purchasing, obtaining discounts through collective purchasing. It could also mean that the procurement officer pilots the process of identifying a new approach which can then be applied across the Region.

Two examples are offered here: a Power Purchasing Agreement (or Energy Supply Agreement) and the widespread purchase of smart meters for Council use.

Most of the Audit reports made reference to the potential advantages of a Power Purchase Agreement (PPA[41]). Some Councils already have a PPA. Dr Chris Briggs at the recent Energy and Innovation Conference outlined processes to establish a PPA[42]. He pointed out that there are different types of PPAs that can have a range of sustainability targets. The real benefit that he identified was greater budget certainty. A PPA can lead to cost savings and can achieve large emission reductions quite quickly. Dr Briggs noted that the standard retail contract or Business as Usual was not a safe nor low risk option as all the electricity spend is exposed to market every time an organisation re-tenders, that is every 3-5 years. His comment was that in a retail contract one should assume you are gambling whenever you are going to market. Further, he suggested that participants should look for the price they can live with, rather than the cheapest price.

Development of a PPA takes considerable time (at least 12 months) with an important aspect to obtain agreement about what is important for each individual Council to be reflected in the PPA. There can also be some flexibility for example while the PPA may seek to have 80% of the power from renewable energy, an individual Council may seek 100% renewable energy. A recommendation around a PPA is offered, on an opt in basis for Councils.

The use of smart meters came up in various Audit reports of Councils. For example, Federation Council had a range of building management systems:

> "Throughout the site audits FGA observed building management systems of varying ages, sophistication, and openness. For Federation Council to realise the benefits of digital asset management, these underlying systems need to be able to provide accurate and timely data to enable proactive and predictive asset management, particularly at the Corowa Civic Centre"[43]

A recommendation on smart meters is included in this RES.

[41] This document uses the term Power Purchase Agreement and Energy Supply Agreement interchangeably. All of the initial Audit reports referred to PPA but subsequent advice from Central NSWJO was that they found that people had a variety of different understandings and assumptions about what a PPA entailed, and that the term "Energy Supply Agreement" was more accurate and consistent for all participating in its development.

[42] Dr Chris Briggs, Research Director Institute of Sustainable Futures, UTS: 'Guide on PPAs for Local Councils' at REROC Energy and Innovation Conference, 14 and 15 September 2022. Wagga Wagga.

[43] FGA audit of Federation Council, page 4

# Proposed Actions

*Table 7: Proposed Actions 1-5 years*

1-5 Years

## Part A: Stationary Energy

| Action | Why/source of recommendation | Measure of success |
|---|---|---|
| **1. Identify and switch to lower cost energy providers** | | |
| 1.1 RAMJO to facilitate wherever appropriate a switch of small scale sites to Shell Contract | Switching to Shell Contract may reduce costs for participating councils | 80% of eligible sites transferred by February 2023 |
| 1.2 Working with Councils identify potential partners to undertake Tariff reviews for sites | Undertaking tariff reviews may reduce costs for councils | 60% of participating Councils complete tariff review by June 2023. |
| **2. Collaborate on purchasing and procurement across the RAMJO Region** | | |
| 2.1 RAMJO to employ an Operational Project Manager (OPM) to assist in implementing the Regional Energy Strategy and other sustainability matters. The role to include developing Regional procurement and purchasing and to identify opportunities for regional procurement outside of energy related matters. | Some Councils are unable to employ additional people to collaborate and identify best practice for collaborative procurement and purchasing | Funding obtained for employment of RAMJO Operational Project Manager<br><br>RAMJO Operational Project Manager employed by March 2023. |
| 2.2 RAMJO to lead the establishment of a Power Purchasing Agreement within RAMJO area, on an opt in basis, with options to include other interested Councils. | All the Energy Audits identified the advantages of a PPA for participating Councils | Agreement with participating RAMJO Councils on parameters for PPA by August 2023. |

| Action | Why/source of recommendation | Measure of success |
|---|---|---|
| 2.3 Assist Councils in developing and accessing RFQs to identify the feasibility and possible opportunities for bulk buy of high efficiency light bulbs for Council premises. | Energy Audits identified locations to change lighting to high efficiency (LED) globes particularly as old lights required replacement | Feasibility of a bulk buy investigated and decision about whether to proceed by June 2023 |
| 2.4 Assist Councils in developing and assessing RFQs for the installation of efficient HVAC systems where required | Energy Audits identified opportunities to replace HVAC systems to replace old, inefficient and manually operated systems. | Guidance sheets identified or developed if existing guidance is not available by April 2023 |
| 2.5 Assist in the development and implementation of best practice procurement policies that incorporate Social and Sustainability Procurement elements | This was identified in workshops and Consultation with RAMJO, SCC and Councils | A Guide to best practice procurement policies identified or developed for use by Councils. |
| **3. Reduce barriers to increasing efficiency** | | |
| 3.1 Identify funding sources and project briefs for installation of smart meters e.g. on bore pumps and other equipment to assist with load shifting | Reports identify financial benefits of load shifting. Not able to be done effectively because needs to be done mechanically and/or in person | Smart meters installed on pump equipment |
| 3.2 Smart meters installed on buildings owned and managed by Councils | Energy Audits identified premises that had very old and inefficient metering systems | Smart meters installed on 80% of eligible buildings by December 2024 |
| 3.3 Provide assistance with Pools which can be very large consumers of energy | This was identified in workshops and Consultation with RAMJO, SCC and Councils | Provide access to guides that are being developed. Host training sessions as appropriate. |

| Action | Why/source of recommendation | Measure of success |
|---|---|---|
| **4. Councils expanding renewable energy generation** | | |
| 4.1 Develop expertise and provide assistance with development of Mid-scale solar | Workshops and Consultation with RAMJO, SCC and Councils | Identify priority locations and options for Council owned Mid-scale solar by December 2023. |
| 4.2 Provide assistance and advice around Ground mounted solar or floating solar systems at Sewage Treatment Plants (STPs) and Water Treatment Plants (WTPs), including use of NSW Government tools. | Options and potential locations for ground mounted solar was identified in some of the audit reports. | Confirmation of potential sites for solar installations for STP and WTP across all Councils by December 2023. |
| 4.3 Collaborate with Councils with reduced energy security and supply to identify opportunities and potential funding to increase both using renewable technologies and storage. | Feedback from draft RES: Berrigan Power Supply deficiencies. How is this being addressed and what role does that pose for RAMJO? | Issues paper including options for Councils experiencing reduced energy security and supply and identifying potential funding sources by December 2023. |

## Part B: Transport

| Action | Why/source of recommendation | Measure of success |
|---|---|---|
| **5. Be prepared and identify opportunities for funding and collaboration** | | |
| 5.1 RAMJO develop a Transport Strategy including EV for fleet vehicles, associated infrastructure and heavy vehicles and equipment. | Identified in consultation with RAMJO Councils. Expanded from a focus on EV Vehicles. | Transport Strategy adopted by RAMJO Board by December 2023. |

| | | |
|---|---|---|
| 5.2 RAMJO in collaboration with NSW Government will assist Councils in identifying preferred locations for EV Charging stations for Council fleets in participating Councils | Discussed with Energy Sub-Committee 5/9/2022 | Preferred locations identified and reports made available to participating Councils by December 2023 |
| 5.3 RAMJO in collaboration with NSW Government will assist Councils in identifying preferred locations for EV Charging stations for destination travel to highlight tourism | Discussed with Energy Sub-Committee 5/9/2022 | Preferred locations identified and reports made available to participating Councils by December 2022 |
| 5.4 RAMJO monitor developments in hydrogen for transport and provide regular reports to the Board and RAMJO Energy sub-committee about relevant initiatives | NSW State Government is undertaking initiatives in hydrogen including Hydrogen highway with funding. Need for Councils to be briefed on opportunities. | Reports provided to RAMJO Board on at least an annual basis. |
| 5.5 RAMJO monitor developments in bioenergy and provide updates to member Councils and provide regular reports to the Board and RAMJO Energy sub-committee about relevant initiatives | This is an emerging area with potential for financial benefits for rural communities. | Reports provided to RAMJO Board on at least an annual basis. |
| 5.6 RAMJO develop RAMJO/Council plans in collaboration with participating Councils to access potential external funding for transport using EV, hydrogen or bioenergy. | Helping Councils develop a suite of project briefs to take quick advantage of any funding opportunities. | Templates and first 5 project outlines developed by February 2023. |
| 5.7 RAMJO prepare an issues and options paper drawing on (for example) recommendations 5.1, 5.2 and 5.6. | Feedback from draft RES: Exploring the options under 5.1 as a collective would be beneficial as the issues/barriers will be the same, although individual Councils may choose different solutions | Issues and options Paper developed by August 2023. |

## Part C: Increasing Capacity

| | | |
|---|---|---|
| 6. Working with others identify training opportunities for understanding emerging financial opportunities through the carbon market | Some Councils identified training needs in workshops and discussions | Training initiatives underway in three Councils by March 2023 |

## Part D: Advocacy and Research

| Action | Why/source of recommendation | Measure of success |
|---|---|---|
| 7.1 RAMJO maintain a watching brief and seek updates on emerging policy shifts at the State and National level that may impact RAMJO Councils particularly:<br>7.1.1 Renewable Energy transition<br>7.1.2 Rewiring the Nation<br>7.1.3Transition lines<br>7.1.4 Renewable Energy Zones<br>7.1.5 Bulk Buying price of electricity | From mid-2022 significant changes including the suspension of the energy market highlighted vulnerabilities and opportunities for Council operations. | RAMJO and Councils understand and take advantage of emerging opportunities and reduce potential harm for communities.<br>RAMJO with Councils act to identify and obtain financial advantages for Councils and communities from investments in renewable energy. |
| 7.1 RAMJO collaborate with other JOs about ways for local communities and Councils to obtain financial, social and employment benefits from the shift to renewable energy. | Federal government legislation for reductions in carbon emissions explicitly identifies the benefits for regions needs to be identified. | Have a conference or workshop series to highlight lessons learnt and showcase success stories for councils across NSW by February 2024. |
| 7.2 RAMJO work with other JOS and the NSW Government to quantify the flow of money related to energy in and out of the region. | Examples in other jurisdictions have identified major export of income to overseas owned power companies. | Confirm parameters of research and identify funds by July 2023. |

| | | |
|---|---|---|
| | Localised ownership and control of energy resources can improve economic returns to the region. | |

## Part E: Monitoring and Evaluation

| | Action | Why/source of recommendation | Measure of success |
|---|---|---|---|
| 8 | Help establish Emissions Benchmarks – Tracking progress to Net Zero or use existing models. | Outcome of workshops and Consultation with RAMJO, SCC and Councils | Benchmark established and initial report available by June 2023.<br>Annual updates made available |

# Conclusion

Local Governments provide an extensive range of services and businesses to their communities, develop and implement legislation in their own right, as well as acting for the State Government

Over 170 different services may be provided by local governments, many of which require the use of energy. Energy use and costs are therefore an integral part of local government. This Strategy came from a recognition that there was potential to be more efficient in the energy use, as well as looking to reduce energy consumption where possible, and potentially reduce costs. It is also aligned with existing NSW State Government policies and legislation.

Throughout discussions with RAMJO Councils it was clear that for many resources of time, money and staff are very limited. The ability to raise additional funds through rate increases is also limited. The rapidly shifting context means there are both risks and opportunities to RAMJO and member Councils. This Strategy and the recommendations position RAMJO and the member Councils to reduce costs to Councils, take advantage of the opportunities that are arising with the rapid shift to renewable energy, and ensure rural and regional communities obtain benefits.

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# Appendices

## Appendix 1: Priority Setting Matrix

The following table provides a quick checklist identifying how a potential project being developed may also serve other benefits. These additional benefits may be used to increase the evidence to undertake the project and/or bolster applications for funding.

*Table 8: Priority setting Matrix (Example)*

| **Name of proposed Project:**<br>**Does this project help achieve the goals in the following Council and NSW Government programs?** | | | |
|---|---|---|---|
| **Name of program/policy** | **Yes** | **No** | **Comment** |
| Adverse Events Plan | | | |
| Climate Risk Strategy | | | |
| Heat waves management | | | |
| Emissions reduction policies | | | |
| **Practical implications of the project/initiative** | | | |
| | **Yes** | **No** | **Comment** |
| Does this project reduce costs to Council? | | | |
| Does this project improve energy security? | | | |
| Does this project/initiative reduce the risk of blackouts on critical infrastructure e.g. sewage treatment plants? | | | |
| Does this initiative reduce the risks of supply chain disruptions? | | | |

# Appendix 2: Benefits, Risks and Costs of Recommendations.

*Table 9: Benefits, Risks and Costs of Recommendations*

*Timeline: Short term (S): 1-2 Years. Medium (M): 3-5 years. Long term (L): 5 years and onwards*

**Part A: Stationary Energy**

| Recommendation number | Timeline | Benefits to Councils | Risk to Councils | Initial /ongoing costs to Council | Activities to reduce risk |
|---|---|---|---|---|---|
| **1. Identify and switch to lower cost energy providers** | | | | | |
| 1.1 Shell contract | S | Available for small site contracts for eligible Councils.<br>Shell rate considerably cheaper than other rates: some Councils have calculated costs reduced by 30% | Potential exit fee from existing contract.<br>Ensuring internal procurement protocols are met. | Staff time in identifying process and checking new rates.<br>Some Councils do not have on-site procurement officer | RAMJO assist in identifying processes and disseminating information to all RAMJO Councils.<br>RAMJO provide support |
| 1.2 Tariff reviews | S | Identifying appropriate tariff rates fit for purpose and location. Tariff reviews can lead to ongoing savings.<br>Also an opportunity for upgraded meters when changing tariffs or providers | Need to be aware of planned changes to site or building before changing tariff. Once off a very old tariff cannot return to it if the use of the building changes. | No financial cost. Staff time in reviewing existing tariffs and identifying better offers. | RAMJO (with Albury Council) develop a cheat sheet on Tariff reviews including potential traps. Provide support to Councils. |

| Recommendation number | Timeline | Benefits to Councils | Risk to Councils | Initial /ongoing costs to Council | Activities to reduce risk |
|---|---|---|---|---|---|
| **2. Collaborate on purchasing and procurement across the RAMJO Region** | | | | | |
| 2.1 RAMJO to employ an Operational Project Manager (OPM) to assist in implementing the Regional Energy Strategy and other sustainability matters. The role to include developing Regional procurement and purchasing and to identify opportunities for regional procurement outside of energy related matters. | S | Councils are often resource poor in time and staff.<br>Some Councils are unable to employ additional people to collaborate and identify best practice for collaborative procurement and purchasing | Work undertaken by OPM not adding value to Councils | Staff time in being part of RAMJO Energy Sub-Committee and expert group. | Funding obtained for employment of RAMJO Operational Project Manager<br>RAMJO Operational Project Manager employed by March 2023.<br>Work through Project Control Team and the RAMJO Energy Sub-Committee and GMs to ensure that approaches are consistent with views of Councils. |
| 2.2 RAMJO to lead the establishment of a Power Purchasing Agreement (PPA), or Energy services Contract (ESG) on an opt in basis, within RAMJO area, with options to include other interested Councils. | S | Energy costs are rapidly increasing in part due to international factors. There are also large fluctuations in prices. A ESG can provide certainty of energy prices for a longer period so that Councils can establish budgets confident that energy | Time will be needed for Councils to identify what they need to be included in the ESG.<br>Councils could be concerned that the price identified with the ESG will be higher in future years and prefer to wait until | Cost of continuing with existing contracts while negotiating the ESG.<br>Staff time.<br>Intense staff time for Steering Committee to oversee the development of ESG parameters. | RAMJO identify leaders and models of organisations that have already successfully undertaken ESGs.<br>RAMJO provide co-ordinating function and support for Councils. |

| Recommendation number | Timeline | Benefits to Councils | Risk to Councils | Initial /ongoing costs to Council | Activities to reduce risk |
|---|---|---|---|---|---|
| | | prices will not change during the period of the ESG. | prices come down. This is also a major risk: the prices may not come down.<br><br>RAMJO Councils may need to collaborate with another JO / other Councils to increase the size of the electricity contract to attract better rates.<br><br>With increased cost of electricity, greater volatility of energy costs and different dates for renewal of contracts this may mean that Councils need to continue with their existing contracts in the short term which may be higher. | | This may include employment of a Project Manager.<br><br>Employment of Probity Adviser and technical Adviser to help steer the process and provide expert advice.<br><br>Ensure excellent communication process so all of Councils understand the steps, process and timelines.<br><br>Set up good probity systems to provide assurance to GMs and Councillors. GMs<br><br>RAMJO identify training, workshop and best practice opportunities. |
| 2.3 Assist Councils in developing and accessing RFQs to identify the feasibility and possible | S | Many of the audits identified opportunities with lighting upgrades. | Different Councils may have different requirements. Need to have an electrical | Staff time.<br><br>Electrician consulting time to ensure best outcome for each Council. | Collaborate across Councils to identify whether this is a feasible approach or not. |

| Recommendation number | Timeline | Benefits to Councils | Risk to Councils | Initial /ongoing costs to Council | Activities to reduce risk |
|---|---|---|---|---|---|
| opportunities for bulk buy of high efficiency light bulbs for Council premises. | | | consultant engaged to identify lighting requirements. Need to make sure that the proposed installations are compliant with standards.<br>This is not a quick or easy process. | Purchase cost of lights could be lower due to bulk buy.<br>Costs of installation. | Check if this work has occurred elsewhere.<br>Identify potential sources of funding. |
| 2.4 Assist Councils in developing and assessing RFQs for the installation of efficient HVAC systems where required. | S | Audits identified a number of buildings in different Councils with old and comparatively inefficient HVAC systems. New HVAC systems increase comfort in buildings and reduce ongoing costs. | Need to consult to make sure the most appropriate systems are being identified and installed appropriate to each Council. | Staff time in identifying what needs to be done and preferred system.<br>Funding required to purchase and install new systems. | RAMJO identifies expertise in area.<br>Identify potential Council expertise in this area.<br>Identify potential funding to bring forward replacement of older systems. |
| 2.5 Assist in the development and implementation of best practice procurement policies that incorporate Social and Sustainability Procurement elements. | M | Being kept abreast of changing requirements.<br>Staff obtaining a level of exposure and skills around new requirements. Provide support particularly for Councils | New rules around social procurement are coming into effect for Councils.<br>More emphasis is being placed on circular economy. | Staff time. | RAMJO researches and identifies models of best practice and appropriate training that can be used by individual Councils. |

| Recommendation number | Timeline | Benefits to Councils | Risk to Councils | Initial /ongoing costs to Council | Activities to reduce risk |
|---|---|---|---|---|---|
| | | with no dedicated procurement officer.<br>Potential for savings across the whole life cycle of the purchase. | | | |
| **3. Reduce barriers to increasing efficiency** | | | | | |
| 3.1 Identify funding sources and project briefs for installation of smart meters e.g. telemetry systems on bore pumps | S | More accurate measurement and control allows for load shifting to reduce costs for a long period. | Funding timetable may not fit within timing of replacement of equipment. | Staff time. | Have a series of potential funding sources identified. |
| 3.2 Smart meters installed on buildings owned and managed by Councils. | S | Provide more efficient use of staff time so that they do not have to travel with meter readers to access meters.<br>More accurate and time sensitive information can lead to changing operations (Load shifting) that can reduce costs.<br>Where renewable energy is being installed, the telemetry systems can also | Quite low. New meters can be installed when there is an upgrade of infrastructure, when buildings are being refurbished and when solar systems or other renewable energy systems are being designed and installed. | If changing providers of electricity then new meters may need to be installed: these can be at the cost of the energy supplier.<br>If not upgrading electricity (e.g. putting in solar) then there will be a cost for each data collection unit and costs of installation. | RAMJO provide case studies, access to best practice and help identify funding opportunities to assist with more up to date metering systems, including telemetry. |

| Recommendation number | Timeline | Benefits to Councils | Risk to Councils | Initial /ongoing costs to Council | Activities to reduce risk |
|---|---|---|---|---|---|
| | | be installed to allow automatic data collection which can also satisfy requirements from State Government and help with future carbon accounting.<br><br>Provides good data on energy costs and emissions savings that can be used in development of other programs such as ESG. | | | |
| 3.3 Provide assistance with Pools which can be very large consumers of energy | S | Pool can be costly to run with the use of pumps, filters and in some cases heating of the water.<br><br>A review of the pool operations (including energy) can also identify potential water losses that can increase the costs for the operation of the pool. | Low risk to Councils. These facilities are already operational. | Staff time. Reducing energy costs will lead to significant savings. | RAMJO and SC provide best practice guide for swimming pools. |
| **4. Councils expanding renewable energy generation** | | | | | |
| 4.1 Develop expertise and provide assistance with | M | A number of Councils have identified the wish to establish mid-scale solar. It | This may be a new venture for Councils to develop their own solar plants. | Council staff and elected representatives time to understand pros and cons | RAMJO identify practitioners who can act as a resource for Councils. |

| Recommendation number | Timeline | Benefits to Councils | Risk to Councils | Initial /ongoing costs to Council | Activities to reduce risk |
|---|---|---|---|---|---|
| development of Mid-scale solar. | | can allow greater control of energy costs, reduce emissions and bring stronger economic benefits to the local community.<br>Benefits of solar remain within the local economy and can provide lower cost energy to Councils and potentially business and the community. | Those interested need to know where to get trusted advice and good understanding of costs and returns to Councils. | of approaches. Cost of investment for development of solar installation. | Hold workshops with other councils and potentially local businesses to diffuse risk.<br>Identify existing best practice guides and resources that can assist (for example BEAM Solar tool developed with LGNSW and being made available by SC) |
| 4.2 Provide assistance and advice around Ground mounted solar or floating solar systems at Sewage Treatment Plants (STPs) and Water Treatment Plants (WTPs), including use of NSW Government tools. | M | STPs and WTPs are major users of energy. Installing solar systems and batteries at these sites provide certainty for pricing as well as can be a buffer to reduce risks when there are system wide power outages as foreshadowed in 2022. | Risks of development and installation of own solar systems.<br>Need to make sure that systems installed are appropriate for site.<br>Staff with appropriate skills to manage and operate all parts of the system. | Consulting and installation costs.<br>Ongoing maintenance. | RAMJO identify practitioners who can act as a resource for Councils. Hold workshops with other councils to increase understanding and share knowledge.<br>Identify potential funding sources. |
| 4.3 Collaborate with Councils with reduced energy security and supply to identify opportunities and potential funding to | S | Some Councils have lost new businesses and industry because of lack of access to energy. | Choosing approaches or combinations of technologies that do not | Cost of investigating options, including potential cost of consultants. Initial investment costs. | Identify who is doing what elsewhere in NSW and across Australia. Tap into existing knowledge bases. |

| Recommendation number | Timeline | Benefits to Councils | Risk to Councils | Initial /ongoing costs to Council | Activities to reduce risk |
|---|---|---|---|---|---|
| increase both using renewable technologies and storage. | | Allows Councils and community to have greater control about the energy resources available and overcome current obstacles. | deliver the energy required.<br>Need to understand different technologies and identify trusted partners to collaborate.<br>Regulatory barriers may currently exist. | | Identify potential funding sources, including potential industry partners.<br>Investigate regulatory barriers and if appropriate lobby for them to be changed. |
| **5. Transport: Be prepared and identify opportunities for funding and collaboration** | | | | | |
| 5.1 RAMJO develop a Transport Strategy including EV for fleet vehicles, associated infrastructure and heavy vehicles and equipment. | S | Prices of fossil based fuels are rapidly increasing. New technologies such as electric vehicles are becoming much cheaper for fleets, provide health and amenity benefits as well as reducing money flowing outside of the region. There are potential benefits of charging vehicles from energy (such as solar) created on site. | Need to identify best use of technology and use of vehicles. Need to ensure vehicles are fit for purpose for usage in town and longer haul. Costs will need to be managed in short term as federal government changes rules (e.g. vehicles emissions standards) and new state wide incentives are made available. Some sites may be using their maximum load currently but this may not be an issue if the | Initial cost of replacing vehicles need to be considered as one part of the life-time costs of vehicles. | Identify if other Councils, JOs and/or local fleet owners are also investigating shifting their fleet and identify potential sharing of information, bulk purchases and other collaborative approaches. |

| Recommendation number | Timeline | Benefits to Councils | Risk to Councils | Initial /ongoing costs to Council | Activities to reduce risk |
|---|---|---|---|---|---|
| | | | vehicles are charged overnight. | | |
| 5.2 RAMJO in collaboration with NSW Government identify preferred locations for EV Charging stations for Council fleets in participating Councils | S | Identifying potential charging stations for fleet and equipment in advance means expensive trench work can be reduced. For example, if a depot is being changed or extended having extra cable installed at the time of extension for future use with EV significantly reduced costs. | Need to think about potential EV fleet in advance of being ready to switch to new fuels.<br>Different fuels are emerging, EV as well as green hydrogen. | Staff time | Identify potential funding and partners with expertise in this area.<br>Briefings and or webinars with Councils. |
| 5.3 RAMJO in collaboration with NSW Government identify preferred locations for EV Charging stations for destination travel to highlight tourism | S | Increasing charging stations at locations that encourage visitors to come to town and charge their EV. Increased economic activity in local attractions located close to charging stations. | Very low risk. Consultants will do the work at no cost to Councils. | Staff time.<br>Engage consultants who can assist in identifying sites. | Obtain external funding. |
| 5.4 RAMJO monitor developments in hydrogen for transport and provide regular reports to the | M | Councils are unlikely to be able to use their staff resources to monitor the rapid changes underway. | Risk may be in being provided incorrect information | Staff and Councillor time in receiving and considering reports. | Make sure that use good sources of information and trusted material. |

| Recommendation number | Timeline | Benefits to Councils | Risk to Councils | Initial /ongoing costs to Council | Activities to reduce risk |
|---|---|---|---|---|---|
| Board and RAMJO Energy sub-committee about relevant initiatives | | Having RAMJO providing updates reduces pressures on staff. | | | |
| 5.5 RAMJO monitor developments in bioenergy and provide updates to member Councils and provide regular reports to the Board and RAMJO Energy sub-committee about relevant initiatives | M | Councils are unlikely to be able to use their staff resources to monitor the rapid changes underway. Having RAMJO providing updates reduces pressures on staff. | Risk may be in being provided incorrect information | Staff and Councillor time in receiving and considering reports. | Make sure that use good sources of information and trusted material. |
| 5.6 RAMJO develop RAMJO/Council plans in collaboration with participating Councils to access potential external funding for transport using EV, hydrogen or bioenergy. | S | Spending time in advance of deadlines to identify the preferred approaches and required infrastructure should make it easier to develop and submit successful applications. | Staff using their time to help develop plans or grant applications which are unsuccessful. | Staff time | Make sure participants are well informed.<br>Share information on what works in applications and what does not.<br>Identify collaborative projects that build on existing strengths. |
| 5.7 RAMJO prepare an issues and options paper drawing on (for example) recommendations 5.1, 5.2 and 5.6. | S | Ambitious plans and advocacy are now being promoted to rapidly change the fleet composition in Australia. In | Not understanding the changes underway can leave Councils with outdated technology and potentially stranded assets. | Staff and Councillors time. | Check if the work has been done elsewhere by reputable groups. |

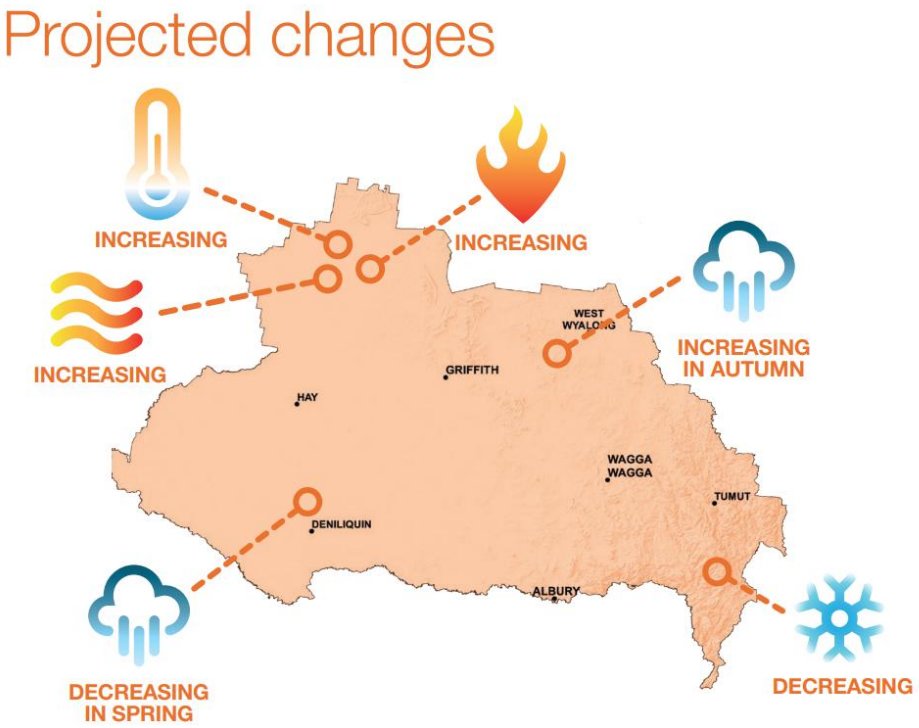
| Recommendation number | Timeline | Benefits to Councils | Risk to Councils | Initial /ongoing costs to Council | Activities to reduce risk |
|---|---|---|---|---|---|
| | | the short term there is a strong push for electric vehicles but other options including green hydrogen are also being promoted. Having an issues paper that helps lay out the issues and options allows for discussions and planning using a common understanding across the Councils. | There are also supply chain risks in continuing to depend on fossil fuels.<br>The risk of developing an issues and options paper reduce these risks. | | Obtain funding if available to assist in writing and producing the report.<br>Ensure that staff are engaged and involved and thinking about the changes in technology that may impact their work. |
| **6. Increasing Capacity** | | | | | |
| 6. Working with others identify training opportunities for understanding emerging financial opportunities through the carbon market | S | Councils being able to take advantage of potential new revenue streams. | Inappropriate investment in activities that do not meet the requirements around carbon trading. | Staff time. | Identify organisations with a good track record and high reputation recognised by formal peak organisations. |
| **7. Advocacy and Research** | | | | | |
| 7.1 RAMJO maintain a watching brief and seek updates and work to influence emerging policy | S | RAMJO and Councils understand and take advantage of emerging opportunities and reduce | There is a rapidly changing energy system and elements. There is a strong risk Local Government and | Staff time. Time out for executive and councillors to gain a better understanding of risks and | Extend networks and connections with other LG, JOs and other advocacy bodies to recognise the |

| Recommendation number | Timeline | Benefits to Councils | Risk to Councils | Initial /ongoing costs to Council | Activities to reduce risk |
|---|---|---|---|---|---|
| shifts at the State and National level that may impact RAMJO Councils particularly:<br>7.1.1 Renewable Energy transition<br>7.1.2 Rewiring the Nation<br>7.1.3 Transition lines<br>7.1.4 Renewable Energy Zones<br>7.1.5 Bulk Buying price of electricity | | potential harm for communities.<br>RAMJO with Councils act to identify and obtain financial and social advantages for Councils and communities from investments in renewable energy. | communities will not be consulted or considered as these changes obtain further urgency.<br>Successful advocacy could lead to tensions with developers and State representatives. | opportunities around energy transition. | need for the enhanced renewable energy projects while ensuring shared benefits.<br>Connection to community energy groups to provide support to them as well as increasing the range of voices. |
| 7.2 RAMJO collaborate with other JOs about ways for local communities to obtain benefits for Councils and local communities from the changes to renewable energy. | S | Building and collaborating with others can identify ways to increase financial returns and social licence for local communities. | Potential for other JOs to not be interested. | RAMJO Exec and staff time. May lead to seminar series or similar to share outcomes of research. | Identify other potential partners e.g. community energy groups and peak bodies to obtain support and share information. |
| 7.3 RAMJO work with other JOS and the NSW Government to quantify the flow of money related | S | Putting a dollar figure on the flow of energy outside of communities may give greater priority to local | | Staff time. Potential consulting costs. | |

| Recommendation number | Timeline | Benefits to Councils | Risk to Councils | Initial /ongoing costs to Council | Activities to reduce risk |
|---|---|---|---|---|---|
| to energy in and out of the region | | generation owned by the community and/or local business. | | | |
| **8. Monitoring and Evaluation** | | | | | |
| 8. Help establish Emissions Benchmarks – Tracking progress to Net Zero or use existing models. | S | Provides regular information on energy generation, consumption and emissions reduction. Shows the efficiency of different approaches used by Council. Can help identify when there are inefficiencies in the energy systems and/or potential malfunction of renewable energy units. Provides feedback to RAMJO and to State Government. Assists in evidence for future state or federal funding. Provides a basis for future carbon tracking and tapping into carbon markets if appropriate. | Potential to identify poor performing plant or sites.<br><br>Disagreement about what should be identified within the benchmarks and what information needs to be collected. | Can be time consuming to record switchboard information from multiple sites on a quarterly basis, particularly when there are reduced staff.<br><br>Site information is available through invoices, and there are programs that may be purchased that will track site information for Councils.<br><br>Could include installation of smart meters on existing meters. If done at an electricity meter there are no upfront costs. However will be costs which will involve purchase cost of units and electrician | Ensure that the emissions benchmarks add value to Councils.<br><br>Identify streamlined electronic systems that produce regular reports of energy generation and/or energy consumption electronically.<br><br>Develop system where RAMJO can assist in collecting and disseminating data.<br><br>Make use of existing tracking systems of solar energy e.g. Sunspot. |

| Recommendation number | Timeline | Benefits to Councils | Risk to Councils | Initial /ongoing costs to Council | Activities to reduce risk |
|---|---|---|---|---|---|
| | | | | installation costs if monitoring particular equipment, for example at water and wastewater sites. | |

# Appendix 3: Climate Projections in the Region




| Projected **temperature** changes | |
|---|---|
| Maximum temperatures are projected to increase in the near future by 0.4 – 1.0°C | Maximum temperatures are projected to increase in the far future by 1.6 – 2.5°C |
| Minimum temperatures are projected to increase in the near future by 0.4 – 0.8°C | Minimum temperatures are projected to increase in the far future by 1.3 – 2.4°C |
| The number of hot days will increase | The number of cold nights will decrease |
| **Projected rainfall changes** | |
| Rainfall is projected to decrease in spring | Rainfall is projected to increase in summer and autumn |
| **Projected Forest Fire Danger Index (FFDI) changes** | |
| Average fire weather is projected to increase in summer and spring | Severe fire weather days is projected to increase in summer and spring |

*Figure 4: Climate Change Impacts in the Region*

*Source: [Murray Murrumbidgee climate change snapshot.pdf (nsw.gov.au)](#) p3*

# Appendix 3: NSW State Government Strategies and Plans

*Table 10: NSW State Government Strategies and Plans*

| Major Policy Initiatives | Details | Links |
|---|---|---|
| Net Zero Plan Stage 1: 2020-2030 | The plan aims to strengthen the prosperity and quality of life of the people of New South Wales, while helping to achieve the State's objective to deliver a **50% cut in emissions by 2030** compared to 2005 levels. The plan will support a range of initiatives targeting energy, electric vehicles, hydrogen, primary industries, technology, built environment, carbon financing and organic waste. | https://www.environment.nsw.gov.au/topics/climate-change/net-zero-plan |
| NSW Electricity Strategy | We recognise that the NSW electricity system must change. Traditional generators are aging and our transmission system is congested. Electricity prices are putting pressure on households and businesses. This strategy will respond to these challenges and support a new affordable and reliable energy system – one that meets both our generation needs and our emissions reduction target. | https://www.energy.nsw.gov.au/government-and-regulation/electricity-strategy |
| Electricity Infrastructure Roadmap | The Roadmap coordinates investment in transmission, generation, storage and firming infrastructure as ageing coal-fired generation plants retire. The Roadmap includes actions that will work together to deliver 'whole-of system' benefits. Attract up to $32 billion in private investment for regional energy infrastructure by 2030. Help reduce NSW electricity emissions by 90 million tonnes by 2030 and support NSW to deliver on its net zero by 2050 ambitions. | https://www.energy.nsw.gov.au/government-and-regulation/electricity-infrastructure-roadmap |
| 5 Renewable Energy Zones (REZs) | Renewable Energy Zones (REZs) will group new wind and solar power generation into locations where it can be efficiently stored and transmitted across NSW. Five zones have so far been identified and will keep NSW electricity reliable as coal-fired power stations retire, delivering large amounts of new energy to power our regions and cities. The state's first 5 Renewable Energy Zones (REZs) are the REZs will help service the growing energy needs of emerging green manufacturing, energy intensive | https://www.energyco.nsw.gov.au/renewable-energy-zones |

| Major Policy Initiatives | Details | Links |
|---|---|---|
| | agriculture and export market opportunities. This makes REZs the ideal place to both generate and use renewable energy and affords the regional communities hosting these zones with substantial opportunities to capitalise on and share in the benefits of the energy transformation. This builds on the NSW Transmission Infrastructure Strategy and supports the implementation of the Australian Energy Market Operator's Integrated System Plan. | |
| EnergyCo NSW | Role is to maximise the opportunities created by the transformation of the NSW electricity system by coordinating investment in Renewable Energy Zones (REZs) across the State.<br><br>We will channel investment in solar and wind farms and storage such as batteries and pumped hydro to places best suited to host it. This means clean energy can be harnessed and distributed reliably and affordably. This will power NSW for decades to come. | https://www.energyco.nsw.gov.au/index.php/ |
| NSW Electric Vehicle Strategy | EVs provide benefits for individuals and the community. Battery and fuel cell EVs produce no tailpipe emissions, have lower running costs than petrol and diesel vehicles, and provide health benefits through lower air and noise pollution.<br><br>Increasing the uptake of EVs also presents new job opportunities, improved fuel security and can help balance household energy supply.<br><br>The Strategy outlines key areas of action to make NSW the easiest place to buy and use an EV in Australia with an investment of $595 million.<br><br>The Strategy is intended to increase EV sales to 52% by 2030–31 and help NSW achieve net-zero emissions by 2050. | https://www.environment.nsw.gov.au/topics/climate-change/net-zero-plan/electric-vehicle-strategy |
| Primary Industries Productivity and Abatement program | NSW Government is investing $125 million over the next 8 years to 2030. This will support farmers and land managers across the State to reduce their emissions, improve their carbon management, and enhance | https://www.energysaver.nsw.gov.au/reducing-emissions-nsw/primary-industries-productivity-and-abatement |

| Major Policy Initiatives | Details | Links |
|---|---|---|
| | biodiversity on their land alongside production.<br>It will also support the sector to increase revenue by accessing environmental markets, accelerating finance for natural capital and low carbon farming, and demonstrating environmental performance to consumers and the supply chain. | |
| Net Zero Industry and Innovation Program | Partnered with the Victorian Government to co-deliver the $20 million **Hume Hydrogen Highway** initiative to establish Australia's first hydrogen refuelling corridor. In February 2022, an extra $300 million was announced to expand this focus area as part of the Government's response to the closure of Eraring power station- external site. This funding will help build the State's clean manufacturing base, using new, clean technologies such as green hydrogen, cement, ammonia and steel production. This will accelerate the roll out of new low carbon industries and is expected to create up to 500 new jobs. | https://www.energysaver.nsw.gov.au/reducing-emissions-nsw/net-zero-industry-and-innovation |
| Accelerating Net Zero Buildings | $4.8M NSW Government initiative to boost the transition of non-residential buildings towards net zero emissions. Under this initiative, the National Australian Built Environment Rating System (NABERS) will investigate and develop a world-leading framework for measuring, benchmarking and certifying emissions from construction and building materials. Accelerating Net Zero Buildings will also include NABERS initiatives to drive new buildings towards high-energy performance and reduce emissions in existing buildings.<br><br>**Energy starters stream** will focus on helping owners of existing buildings that are in the early stages on their energy efficiency and sustainability journey. This includes providing financial incentives for buildings to receive their first-ever NABERS Energy rating, and to embed a culture of measurement, and annual improvement of energy performance. | https://www.energysaver.nsw.gov.au/reducing-emissions-nsw/accelerating-net-zero-buildings |

# Appendix 4: Patterns of Energy Use and Emissions in Councils.

The following pie charts are from the series of Audits undertaken with funding by SCC.

## Berrigan Shire Council

Electricity consumption summary.

The following two charts provide a summary of where and how electricity is used, including:

- Top 10 electricity using sites seen against the balance of consumption
- Assessed electricity end use by equipment type

*Source: Berrigan Shire Council: Energy Strategy, Pages 34 and 35.*

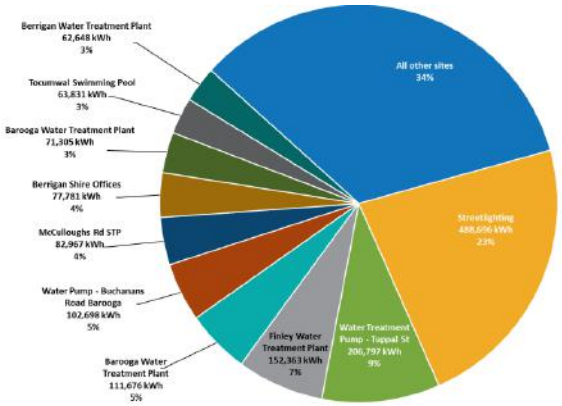



Figure 5: Berrigan Shire Council's Large Electricity Using Sites

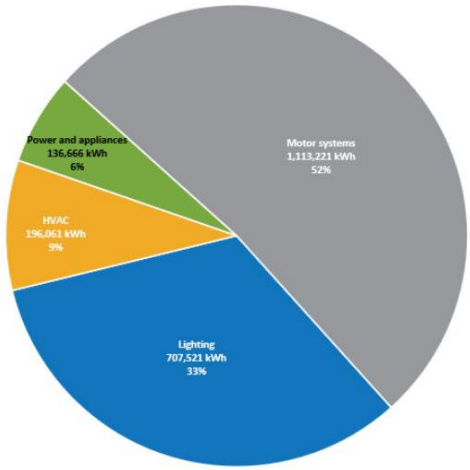



*Figure 6: Berrigan Shire Council's Electricity Use by end use equipment*

## Edward River Council

Electricity consumption summary.

As the main source of energy-related greenhouse gas emissions, electricity use was assessed further. The following two charts provide a summary of where and how electricity is used, including:

- Top 10 electricity using sites seen against the balance of consumption
- Assessed electricity end use by equipment type

*Source: Edward River Council – Energy Strategy. Pages 35-36*

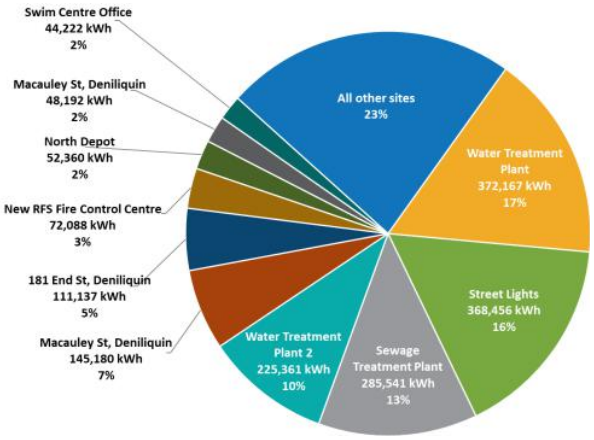



*Figure 7 Edward River Council's large Electricity Using Sites*

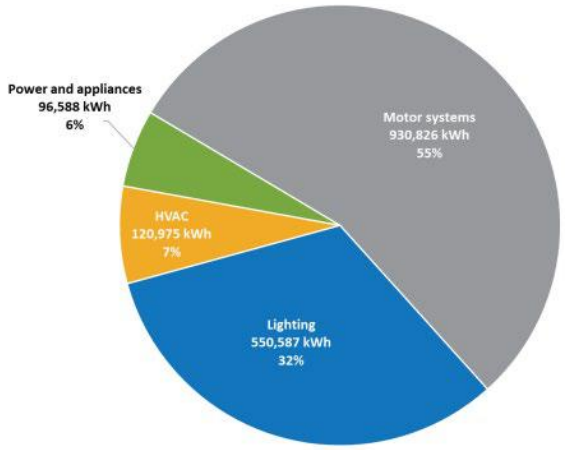



Figure 8: Edward River Council's Electricity Use by End Use Equipment

## Leeton Shire Council

"The following three charts provide a summary of where and how electricity is used, including:

- Top 10 electricity using accounts/sites seen against the balance of consumption
- Electricity use by site type, and
- Estimated electricity end-use by equipment type Electricity use is dominated by a small number of large sites/accounts (including the main streetlighting account) and many individually small electricity using sites.

The 'top 10' sites' use 77% of all Council's electricity."

*Source: Leeton Shire Council Energy Masterplan, pages 36-38.*

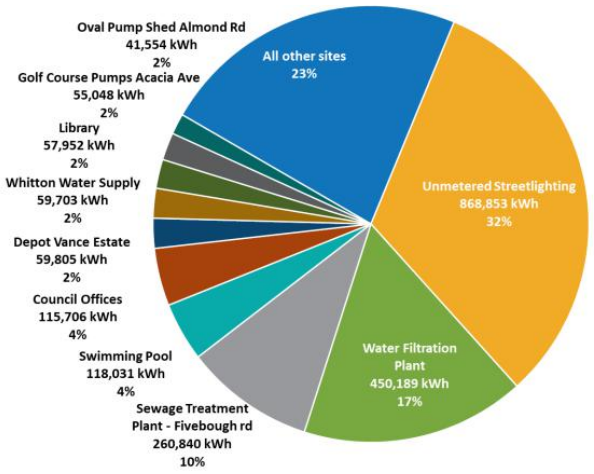



*Figure 9 Leeton Shire Council's Large Electricity Using Sites*

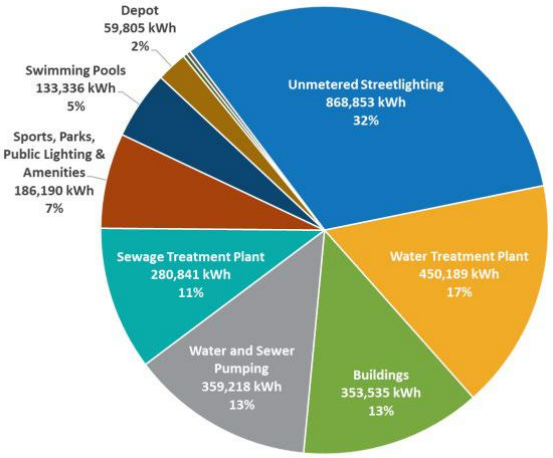



Figure 10 Leeton Shire Council's Main Electricity Using Asset Categories

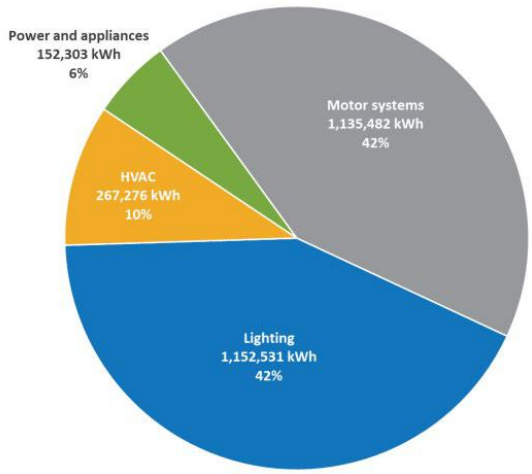



*Figure 11: Leeton Shire Council's Electricity Use by End Use Equipment*

## Narrandera Shire Council

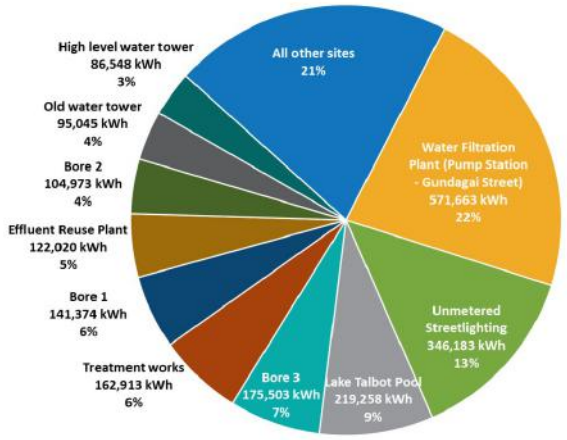



Figure 12: Narrandera Shire Council's Large Electricity Using Sites

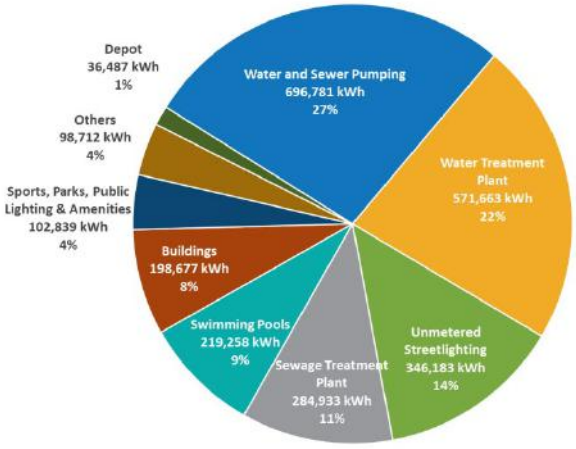



Figure 13: Narrandera Shire Council's Main Electricity Using Asset Categories

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