

Lachlan renewable energy project

COUNCIL NAME

Lachlan Shire Council

WEB ADDRESSlachlan.nsw.gov.au**SIZE**

14,964

POPULATION

6151

Overview

Lachlan Shire Council developed and adopted an energy sustainability plan, uncovering \$360,000 of savings per year across a range of projects - from solar installations, to new energy contracts. In June 2021, Lachlan Shire Council completed installation of fourteen renewable energy projects, all at Council-owned facilities.

Council installed a total of 612KW of solar power and 180KWh of battery storage, improving resilience through site reconfigurations. Changes and activities included: incorporating renewable energy, trials of battery storage, peak demand shaving, intelligent demand response and control, electric vehicle charging, virtual power plant trials, assessing real time savings, energy and carbon emissions reduction - through a dedicated monitoring platform.

Background

Lachlan Shire Council lies at the heart of New South Wales. Spanning nearly 15,000 square kilometers of rich red earth intersected by the Lachlan River, the Shire has a population of 6,200. Like most small local governments with large geographical footprints, Lachlan Shire Council's focus is usually on roads, rates and rubbish. The community was also dealing with one of the worst droughts in 100 years.

The installation of fourteen renewable energy projects responds to Council's Delivery Program, which calls for initiatives to reduce Council's carbon footprint. As a water and sewer authority and a community service provider, Council was importing more than \$1 million in energy each year, most of it sourced from the electricity grid and liquid fossil fuels.

Budget forecasts showed Council needed to undertake measures to reduce operational costs, whilst providing core services to local communities. A declining population and increase in energy costs would contribute to rates being increased and/or a reduction in services. Council wanted to implement new sustainable operational measures and pivot away from "business as usual". By investing in energy saving projects, Council reduces the considerable operational costs and carbon emissions, associated with importing energy.

To implement sustainable change and renewable energy on a larger scale, an Energy Sustainability Plan (The Plan) was developed and adopted by Council in September 2020. The Plan outlines key areas to reduce energy consumption and operational costs, whilst continuing to meet community and industry needs. The Plan enables visions, strategies and timeframes to improve sustainability and meet renewable energy goals. The Plan also nominates projects and guides decision making and grant applications. Key components are using an energy management hierarchy, identifying and achieving initiatives, setting targets, self-sufficiency and sustainability, adaptive management, as well as reporting and monitoring. Council's Sustainable Energy Plan 2020 goals are to:

- Reduce electricity import by 12% over the next two years
- Increase Council's renewable energy by 25% over the next five years
- Reduce Council's Carbon emissions by 385 tonnes over the next five years

Implementation

In 2019, with assistance of the NSW Government's Sustainable Councils and Communities (SCC) program, Council identified a range of projects to save nearly \$960,000, cut carbon emissions and create local jobs. Working with the SCC team, Council staff identified sites suitable for installation of renewable energy.

A team of consultants was engaged to review energy data and develop a Sustainability Direction Report and an overview of Solar PV and Tariffs options. The Report identified opportunities to generate savings while achieving sustainability goals. Council formed an internal working group to provide input, identify potential problems and collaborate with consultants to deliver projects.

Staff found opportunities to include other benefits in the projects, including installation of a solar carport at Council's Administration Building. This infrastructure produces renewable energy, offsets energy consumption by Council's Building, serves as a carport to protect staff and council's light fleet and has provisions for electric vehicle charging.

Another initiative was the installation of monitoring devices at each site. Monitoring allows energy consumption review, peak demand identification and savings tracking. A new dedicated dashboard monitoring platform was developed to record savings and provide reports to local communities and other Council stakeholders.

Council gained federal government funding through the Local Roads and Community Infrastructure Grant Program. This provided 100% funding of \$1.1 million and required at least 11 renewable energy projects to be installed by 30 June 2021.

Lachlan Shire was able to deliver 14 renewable projects, providing maximum energy offsetting as well as alternative benefits and uses. In January 2021, the working party categorised the 14 projects into groups based on location, solar kW size, system types (ground mounted or rooftop) and requested quotations in accordance with Council's Procurement Policy - from suppliers / installers in located regional NSW. This helped ensure grant funding was spent within regional NSW. The Lake Cargelligo Water Treatment Plant Solar Plant and Battery required a tender process. The project was delivered on time and within the budget allocated to the project.

Outcomes

Lachlan Shire Council installed and commissioned a total of 612kW of renewable solar energy infrastructure and 180KWh of battery storage, across 14 sites. All sites have active monitoring and a central dashboard reports on energy consumption, peak demand, real time data and savings tracking.

The renewable energy project included the following sites and solar systems sizes:

- Lake Cargelligo Water Treatment Plant – 240kW and 180 kWh Battery
- Merri Abba High lift Pump – 100kW
- Condobolin Administration Building – 45kW solar carport
- Condobolin SwimmingPool – 45kW
- Condobolin Caravan Park – 32kW
- Condobolin Sewer Treatment Plant – 20kW
- Lake Cargelligo Sewer Treatment Plant – 20kW
- 16 Mile Pump, Tullibigeal – 20kW
- Lake Cargelligo Multi Service Centre – 15kW
- Tottenham Swimming Pool – 15kW
- Tottenham Water Treatment Plant – 15kW
- Home and Community Centre – 15kW
- Condobolin Children Services – 15kW
- Condobolin Library – 15kW

The long-term outcomes from the renewable energy projects are expected to deliver the

following benefits:

- An annual generation of 978 MWh of renewable energy,
- Council carbon footprint reduced by 792 tonnes per annum,
- 27% reduction in net energy compared to 2019 baseline,
- 17% reduction in gross energy import from the grid.

When combined with a renegotiated energy contract and targeted tariff adjustments, the annual economic savings are estimated to be \$365,000 every year. Council puts annual operational savings into a new revolving energy account, to ensure funding is available to replace the infrastructure when it reaches its end of life and to roll out other renewable energy projects.

An unexpected outcome was additional revenue of \$5,000 per annum, for carbon reduction associated with Large Scale Generation (LGC) at the Lake Cargelligo solar power plant, commissioned in two stages. The first stage brought online 100kW of energy, and Small Scale Technology certificates (STC's) were claimed. The following 140KW was then claimed as Large Scale Generation (LGC). Claiming the first 100kW of STCs has allowed for a rebate to be activated and an upfront discount was used to fund further battery storage capacity. Originally 125kWh battery storage was specified, however capacity was increased to 180kWh.

Key Learnings

Project success was due to a coordinated approach between the working group of internal staff and consultants, including technical assistance from the NSW Government's Sustainable Councils and Communities Program. Key learnings from the project:

- Seize opportunities when they arise
- Engage staff with skills, knowledge and interest
- Invite others to contribute during technical and practical exercises
- Think laterally and be flexible to achieve bigger outcomes
- What works on paper doesn't always work in the field
- Be ambitious
- Communicate ideas
- Research and plan

The first stage of the renewable energy project was to install significant solar and battery infrastructure at high energy usage sites. Now the infrastructure is commissioned, next steps include getting the most out of renewable energy by offsetting and minimising import from the grid and using renewable energy produced onsite. This will be achieved by consulting with stakeholders and adjusting operational procedures to shift demand loads within daylight hours and peak energy production timeframes.

Council also intends to create a sustainability committee to direct and monitor the Energy Sustainability Plan and use the lessons learnt to produce and implement a community wide sustainability plan. This committee will include members of Council's sustainability team, an elected Councillor, and other identified influencers in the community. The longer term goal is net zero emissions across the LGA.

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This project was the 2021 winner of the Sustainable Infrastructure Award at the LGNSW Excellence in the Environment Awards.