



Community Battery Stage 1

Member Update February 2025





This project is made possible due to partial funding from the Federal Government's Community Batteries for Household Solar Program.

Hepburn Energy acknowledges Dja Dja Warrung as the traditional owners of the land in which the community battery will be sited. The co-operative extends its gratitude to R & N Liversidge for allowing this expansion at their farm

With thanks to the following partners

- Sunwoda
- Flow Power
- Seed Advisory
- Kinelli Solar
- BAL Lawyers
- NGH Consulting
- MARSH
- Powercor
- VESTAS
- O'Brien Electrical
- Optigrid
- SMA
- DNV
- HWL Ebsworth
- NGH Consulting

February 2025

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Community Battery Project Background



Minister Bowen's visit to the wind farm April 2022,
pre-election commitment received in May 2022

Hepburn Energy has been developing the concept of co-locating a Battery Energy Storage System (BESS) at our windfarm to support our energy output and mitigate negative pricing since 2021. In that year, we installed an inverter from SMA as a requirement for the Rapid Earth Fault Current Limiter (REFCL) used for bushfire mitigation. This inverter has proven to be a key asset in facilitating an affordable battery for the co-operative. By 2022, the co-operative secured a planning permit for a 10MWh battery, along with an additional 5MW solar system.

In May 2023, we were successful in our application to the Federal Government's Community Batteries for Household Solar initiative. This provided us with \$500,000 to deliver Stage 1 of our battery project.

Since 2023, there has been an ongoing process to determine our optimal battery size. Smaller scale batteries (500kWh) were found to be non-viable due to their operational costs exceeding potential income. Additionally, the operating environment changed significantly, with the risk of negative pricing, rising from 2% in 2023 to 12% in 2024, increasing the pressure to invest in a larger battery system. After evaluation, three battery sizes were identified as feasible: 2MWh, 2.7MWh, and 5MWh. Among these, the 5MWh option was most viable but dependent on financing.

Further research was conducted by the cooperative to ensure due diligence on the ethical background of battery suppliers, as well as to assess the scope of work and costs from battery installers. This booklet provides an update for members on stage one of our battery project, current as of February 2025.

Glossary

BESS	Battery Energy Storage Systems
CAPEX	Capital expenditure
OPEX	Operational costs
IRR	Internal rate of return: the annual rate of growth that an investment is expected to generate
NPV	Net present value: refers to the difference between the value of cash now and the value of cash at a future date
PAYBACK	years it will take to payback initial investment
EBOP	Electrical balance of plant
REFCL	Rapid Earth Fault Current Limiter



Project Overview

Our community battery was ordered in December 2024 and the overall project specifications are as follows:

- Capacity: 2MW / 5.015MWh
- CAPEX: \$1,784,000
- IRR: 9.1%
- Payback: modelled at 8 years
- Economic life: 20 years (but modelled only at 15 years to be conservative)

Siteworks commenced in February and the battery is scheduled for installation on-site at the wind farm in June/July 2025 over a three week period. It will be connected to the existing inverter, and behind the existing grid connection

Business model



Battery modelling is highly speculative and forecasts are changing constantly in a volatile market. Our approach has been to be conservative and to try to limit future surprises in performance. The conservative 15-year lifespan prediction aligns with a reasonable life extension of our wind turbines. There are no additional inclusions for peak power events and no inclusion on import revenue, although the co-op is aiming for import with grid connection variation.

Aurora Forecasts, which are best available in the Australian market, provide 3 potential scenarios for the future type of transition to renewables and their effect on the market: Low, Central and Messy.

The following tables use these potential future scenarios. Developers and financiers generally use Central forecasts for bankability, but the co-operative could have some years that are close to Low, and some that are close to Messy.

Please note, the co-operative has further scaled down the IRR to 9.1% from the business model results as contingency for energy uses and losses across the new equipment.

Business model

Scenario	Low	Central	Messy
Base case	\$9,990,093	\$12,404,628	\$15,994,789
5010kWh BESS	\$11,598,373	\$14,574,432	\$ 18,615,843

Business model results total project earnings

Low			Central			Messy		
IRR	NPV	Payback (years)	IRR	NPV	Payback (years)	IRR	NPV	Payback (years)
3%	-\$94,433	12	10%	\$239,371	10	20%	\$524,036	8

Equity finance net of base case

Low			Central			Messy		
IRR	NPV	Payback (years)	IRR	NPV	Payback (years)	IRR	NPV	Payback (years)
4.5%	-\$30,364	11	9.7%	\$342,483	8	16.3%	\$719,750	5

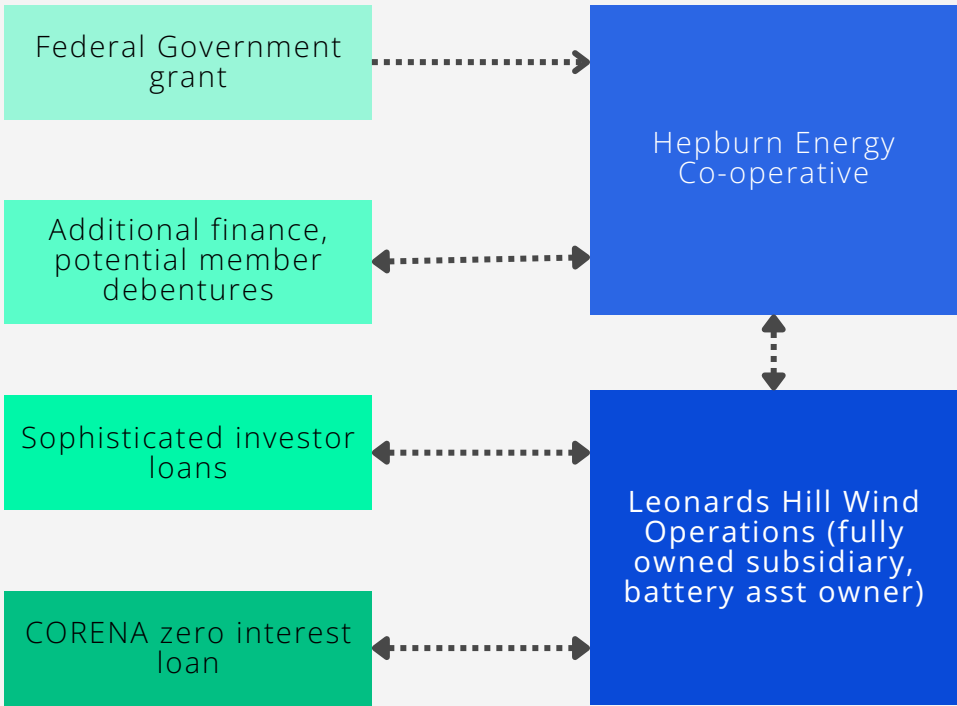
Project finance net of base case

External Financial Arrangements

Financing will be sourced from a variety of avenues, including the federal government grant, debentures available to members, loans from sophisticated investors and a zero-interest loan facilitated by Citizens' Own Renewable Energy Network Australia (CORENA).

The table below details the current financing options and the graph on the following page details the flow of money.

Source	Type	Funding	Status
Federal Government	Grant	\$500,000	Confirmed
CORENA zero-interest loan	Loan	>\$100,000	Confirmed/raising
Sophisticated investors / third parties*	Loan	\$1,000,000	Confirmed/raising
Hepburn Energy Members	Potential Debentures	TBD	EOI to assess interest



Finance structure

Delivery Partners

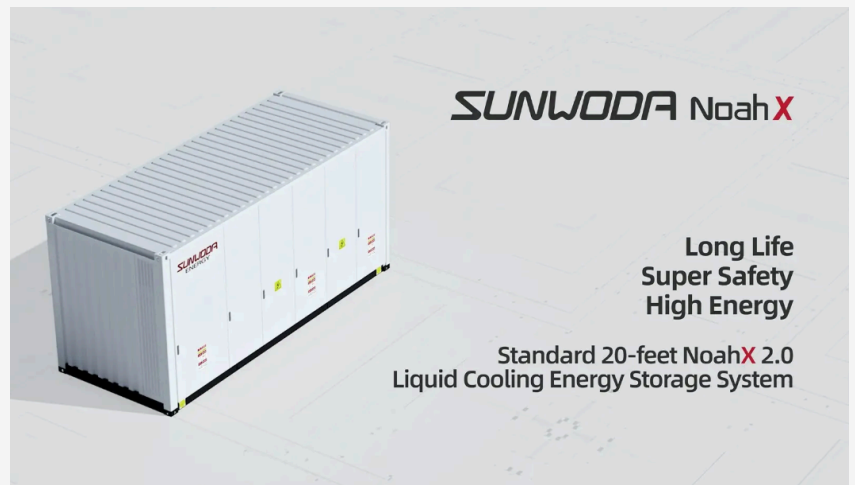


Many incredible organizations will make our battery project possible. From manufacturers to technicians, collaborators, and consultants, the following pages will introduce the key delivery partners for Stage 1 of our community battery.

SPECIFICATIONS

SCALE	5MWh (5051kWh)
SIZE	20 Foot container
WARRANTY	15 year extended warranty as part of OPEX model

PREVIOUS PROJECTS	Kinelli Solar and the Kanowna Solar Farm in NSW
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The Hepburn Energy team thoroughly evaluated the ethical backgrounds of companies before selecting a community battery. The criteria for battery manufacturers included compatibility with the existing SMA inverter, cost, site functionality, and project experience.

After this rigorous process, the co-operative chose a battery from Sunwoda Energy Technology Co., Ltd., a subsidiary of Sunwoda Group since 1997, located in Shenzhen, China. Sunwoda specializes in manufacturing lithium-ion batteries for electric vehicles, power management systems, and energy storage solutions. The company employs over 40,000 people across 15 production facilities worldwide and is recognized as Apple's first battery supplier.

Sunwoda addresses environmental impact through an ESG Management Committee and follows a conflict minerals policy. They uphold human rights by ensuring compliance with labour laws and sourcing from conflict-free suppliers. Sunwoda has a Risk Control and Audit Center and promotes employee reporting of misconduct, enforcing a strict zero-tolerance policy on corruption and fraud in its supply chain.

Sunwoda has successfully commissioned its first Australian BESS at Kanowna Solar Farm in NSW in late 2024, which means the co-operative is not a first mover with this technology in Australia and important learnings can be passed on.

O'BRIEN ELECTRICAL ENGINEERING CONTRACTORS

Engineering, procurement and construction (EPC) and SCADA upgrade

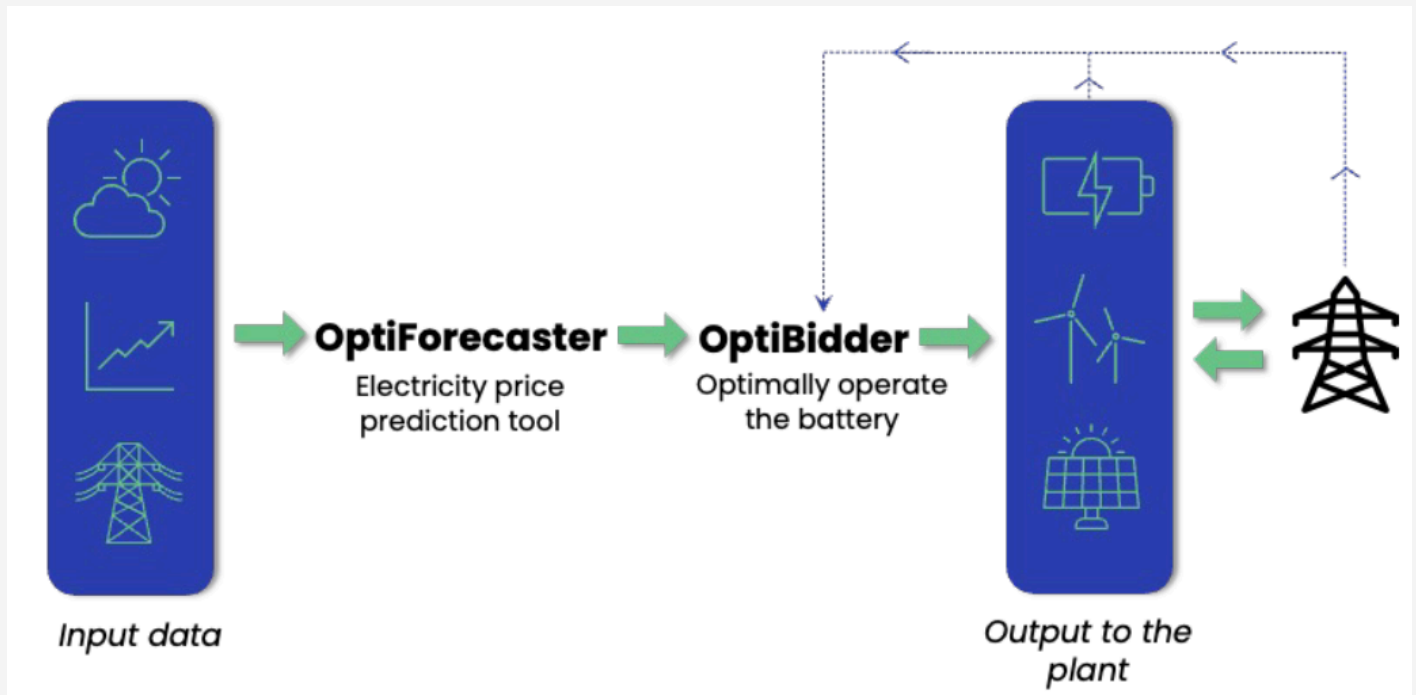


O'Brien Electrical, located in Ballarat, has been responsible for the electrical balance of plant (EBoP) at the wind farm for over 10 years. They have proven to be a reliable and communicative partner. In 2021, they successfully completed our REFCL upgrade.

For the stage 1 project development, O'Brien estimates that site work will take approximately two weeks, followed by a 3 to 5 week period for installation and commissioning. After this phase, they will provide annual maintenance for the SMA inverter, DC-DC converters, and the community battery.

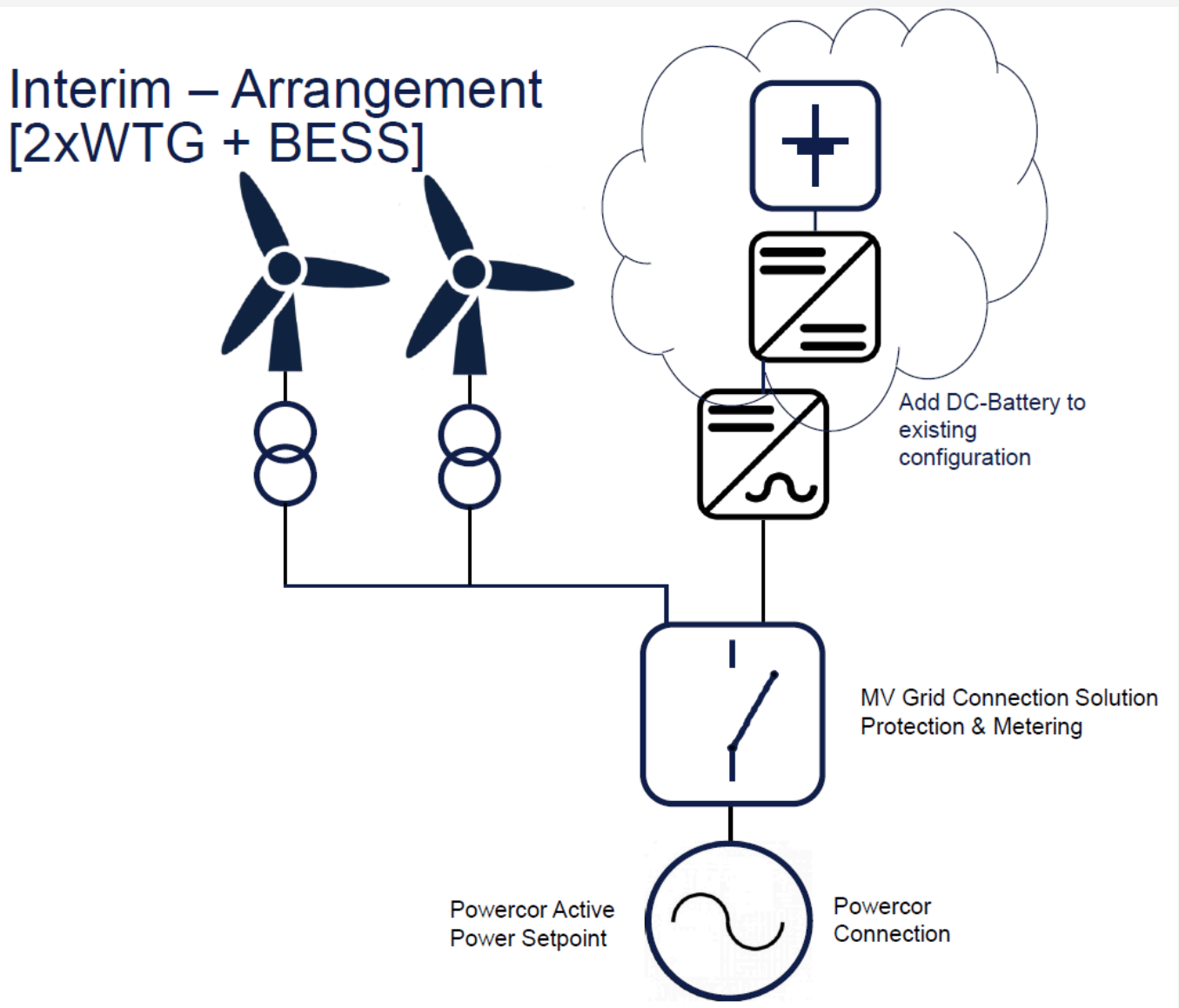


Our community battery project will utilize SMA DC-DC converters, the DC-coupled SMA inverter that is already on site, and four DC-DC converters to facilitate the connection to the community battery.



OptiGrid provides solutions for forecasting electricity prices, optimizing the trading of batteries, and managing renewable energy assets specifically designed for Australia's National Electricity Market. Our community battery project will use the OptiGrid energy management system to ensure efficient operation of the battery.

This approach will help the co-operative navigate the increasing volatility in the energy market by allowing the battery to collect wind energy during low-price periods and sell the stored energy during times of higher prices.



DNV is currently working on the 'Interim' connection of the 5MW community battery only. The second stage will involve the 'Ultimate' connection of 5MW solar panels and an additional 10MWh of community battery storage.

GHOSTPATROL

Community battery mural



Our cooperative has a long-standing relationship with David Booth, also known as the street artist Ghostpatrol. In 2013 and 2015, Ghostpatrol painted each of the wind turbines, Gale and Gusto, which received global acclaim as the first of their kind in the world. The mural that Ghostpatrol will create for our community battery will reflect our cooperative's story, more in this to come.

You can find out more about David's work here: <https://david-booth.com/>

