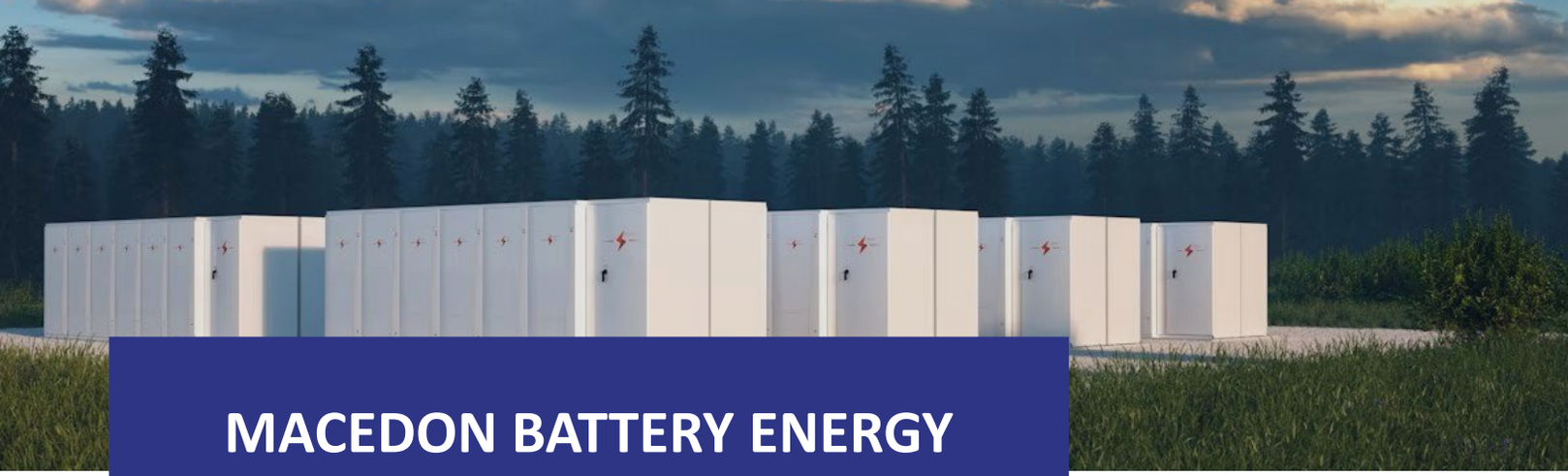


MACEDON BATTERY ENERGY STORAGE SYSTEM - FAQs

1. WHAT IS THE MACEDON BATTERY ENERGY STORAGE SYSTEM & WHY IT IS BEING BUILT IN MY AREA ?

Macedon Battery Energy Storage System (BESS) is the newly proposed project by South Energy. We specialise in developing large-scale renewable energy projects. A BESS acts like a giant rechargeable battery for storing electricity. This battery system is proposed to have a 4-hour duration that can support the electricity needs of the region and help to stabilise the grid.

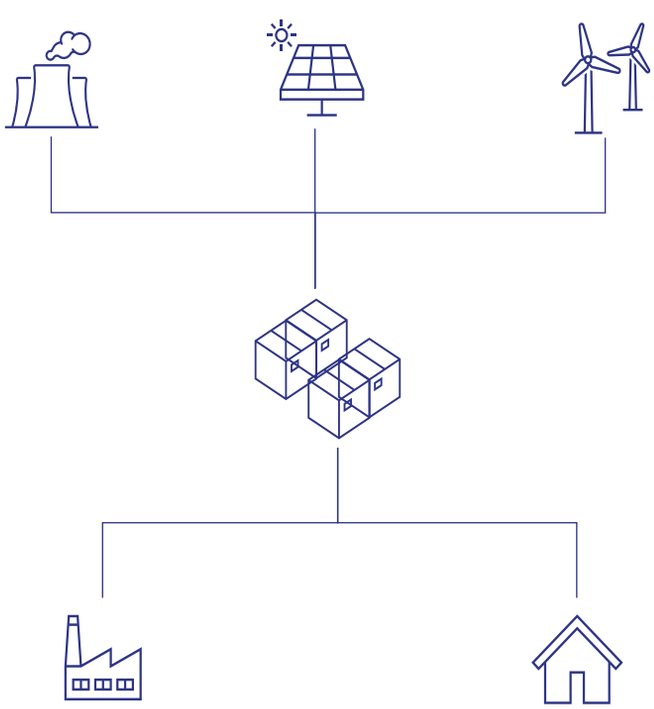
The BESS will be located on the land between Macedon-Woodend Road and Calder Freeway. The reason we chose to build the BESS in this area is due to **its proximity to Gisborne 66kV Substation, allowing the project to directly feed into the electricity network.** Please see the attached map for the site layout.

2. HOW DOES BESS WORK?

The battery is like a power bank for a phone but on a larger scale. Similar to a typical battery that needs charging and then followed by discharging for power consumption, BESS also needs to charge its energy from the grid, typically during peak production such as at midday when there is plenty of solar energy entering the grid. When the demand for electricity rises, BESS will discharge its stored energy and export the electricity back to the grid.

A typical BESS system will consist of:

- **Battery containers**: which house the battery racks, as well as other system components such as a battery management system (BMS), cooling system, and fire suppression system.
- **Power conversion system (PCS):** which are electrical conversion units that convert between DC and AC electricity between the battery (DC) and the grid (AC).
- **Transformer station:** convert high voltage on the grid to the medium voltage for the PCS.



BESS's operation in the electricity network

PROJECT BENEFITS & DEVELOPMENT PROCESS

3. WHAT BENEFITS WILL THIS BESS DELIVER FOR ME & MY COMMUNITY?

SUPPORT RENEWABLE ENERGY

BESS stores excess solar and wind power when demand is low and releases it during peaks, like storing energy in the day and supplying it in the evening, boosting renewable use.

KEEP POWER GRID STABLE

BESS keeps the grid stable by storing and supplying power when needed, balancing demand during spikes. This reduces reliance on costly, polluting backup plants and makes electricity more reliable, affordable, and steady.

CREATE JOBS & IMPROVE ECONOMIC

The project will create local jobs and boost the economy, with demand for construction workers, installers, suppliers, as well as accommodation, food, pubs, and other services.

4. WHAT'S INVOLVED IN THE DEVELOPMENT OF THE BESS PROJECT?

A lot of work goes into the planning, study, design and construction of these large projects. Typically, the following activities are undertaken:

- Feasibility studies & grid connection studies (environment, water, noise, bushfire etc.)
- Site investigations
- Consultations with local council and government agencies
- Obtaining necessary permits and approvals for project
- Detailed design
- Investment decision
- Procurement of contractors and equipment

5. HOW WOULD THE CONSTRUCTION OF THIS BESS IMPACT ME AND MY COMMUNITY?

South Energy recognises community concerns, particularly from nearby landowners, about potential project impacts. We are conducting detailed studies on the Macedon BESS to identify and implement effective mitigation measures. These studies typically include, but are not limited to:

- A detailed and comprehensive environmental study to identify affected vegetation, trees, and animals;
- Noise impact from the construction and operations of the BESS;
- Bushfire risks;
- Traffic assessment;
- Landscape and visual assessment;
- Cultural heritage.

CONSTRUCTION

6. When will the BESS project construction commence and how long will it last?

Macedon BESS is planned to commence construction in early 2027 with completion within 10 months. A typical BESS facility is expected to have an operational life of up to 20 years. Regular operation & maintenance activities are scheduled regularly every quarter to ensure optimal system health and performance.

7. What to expect during construction of the BESS?

Traffic

Peak traffic activity related to a BESS will take place during construction. A Traffic Management Plan (TMP) is created in coordination with the relevant road authority to ensure proper management of construction traffic. Major highways and main roads are used whenever possible, while local roads are utilised as needed to reach the construction site.

Working hours

Victoria's Environmental Protection Agency (EPA) recommends standard construction hours, typically from 7 AM to 6 PM Monday to Friday and 8 AM to 1 PM on Saturdays.

Noise

State or territory legislation guides construction noise targets. If any project activity is expected to exceed these limits, we implement mitigation measures to reduce the impact around your residence. This may involve scheduling noisy tasks at times of least disruption, maintaining equipment and machinery, minimising noise from reversing beepers, shutting off unused machinery, and enforcing speed limits to reduce engine noise.

Social and economic

During construction, you may notice increased activity with more people and vehicles in town and on the roads. This temporary workforce helps boost the Macedon's economy by spending on accommodation, food, and various local goods and services, supporting local businesses.

Safety

Safety will always be the number one priority for us as the developer and our contractors. Through carefully developed Health & Safety Management Plans, the contractor will work closely with us to ensure all risks are identified, mitigated and communicated to the workers. Mandatory safety trainings will also be scheduled for staff and contractors before starting work on site. These safety guidelines ensure that the public safety is prioritised.

VISUAL LANDSCAPE & SOUND

8. WHAT DOES THE BESS LOOK LIKE?

The BESS are containerised and modular systems, which are compact and can be scaled to the desired capacity. The ever-evolving technology means that the system is becoming more compact and efficient, hence reducing the need for a large amount of land.

For Macedon BESS, the installation area is surrounded and covered by native trees and vegetation, which helps in minimising the visual impact of this system.

Typical Battery Energy Storage System Visualisation (*Source: Stock Image*)

9. WILL THE BESS MAKE ANY SOUND?

Like any equipment, there will be noise from the BESS components, mainly from the cooling systems such as fans and the inverters. South Energy has engaged a reputable consultant with proven expertise in developing and designing battery and renewable energy projects to conduct noise assessments.

South Energy, the consultant and BESS project's equipment suppliers will work together to assess the noise level and put in place the mitigations required to ensure the system complies with the Environmental Protection (Noise) Regulations 1997.

Noise wall solution and noise reduction kit installed for a BESS project near LA, California (*Source: Noise Monitoring Services*)

10. HOW WILL THE SYSTEM SOUND BE MITIGATED?

Once system sound levels are determined through modelling, mitigation measures will be investigated. These can include:

- Installing noise reduction kit on the equipment noisy components (such as fans, cooling systems, transformers);
- Positioning the equipment further away from residential property;
- Erecting noise walls to act as a barrier and reducing the equipment's power especially during the sensitive hours.
- Tailor the system's operational profile to reduce fan speed, effectively mitigating the noise emission

Our trusted experts in noise mitigation, SLR Consulting has been engaged to conduct the full system noise assessment and mitigation for Macedon BESS project.

FIRE RISK MITIGATION

11. HOW WILL WE ADDRESS THE RISK OF FIRE?

Any risk of fire and explosion can be fully mitigated by employing four levels of safety.

First layer safety level

Battery thermal management system (BMS) is the critical mechanism built into the battery container and operation system to constantly monitor the battery's health, ensuring the longevity and safe operation. Parameters such as the state of charge, voltage, current, power limits, temperatures are constantly monitored. This helps to prevent any potential fires by shutting down the battery modules/racks if any of these parameters are outside of the permitted safe operation.

Second layer safety level

The next safeguard is the gas detection system which immediately detects the rising temperature and released gases. This detection of the released gas, would trigger the shutdown of the power to the affected battery cell, activate the ventilation system inside the BESS enclosure, activate fire alarms and provide early warnings to the BESS operators.

Third layer safety level

If smoke is detected in the BESS enclosure, the fire suppression system will activate by releasing the suppression agent to extinguish the fire.

Fourth layer safety level

A Risk Management Plan will be developed in coordination with the Fire Authority that outlines the controls for the management of on-site and off-site risks at the BESS facility. Local firefighters will be notified immediately to attend the site and utilizing the onsite fire management equipment & facilities to manage the fire.

12. WHAT HAPPEN AT THE END OF BESS LIFE CYCLE?

The lifecycle of the Macedon BESS project is 15 to 20 years, at which time South Energy would either upgrade and/or replace the relevant BESS components to extend the lifecycle for another 15 to 20 years, or to decommission the BESS and reinstate the original use of the land. Decommissioned BESS components will be recycled.

ABOUT SOUTH ENERGY

13. IS SOUTH ENERGY AUSTRALIAN OWNED?

South Energy is an Australian-owned, Melbourne-based renewable energy company that specialises in the development of renewable energy projects.

14. WHAT EXPERIENCE DOES SOUTH ENERGY HAVE?

South Energy has a portfolio of renewable energy development across Victoria and Western Australia. These include:

Western Australia

- Narrogin BESS Project, 200 MW/800 MWh
- Benger Solar Farm, 100 MW
- Waroona Solar Farm, 200 MW

Victoria

- Yangery BESS Project, 120 MW/480 MWh
- Campbells Forest Solar Farm, 200 MW
- Goorambat Solar Farm, 75 MW
- Kennedys Creek Solar Farm, 145 MW
- Lake Mokoan Solar Farm, 115 MW
- Frasers Solar Farm, 77 MW

15. WHAT ARE SOUTH ENERGY'S BUSINESS VALUE?

South Energy believes that clean and sustainable energy is the best solution for mitigating the risk of climate change. Our mission is to work collaboratively with all stakeholders, including government and the community, to ensure a greener future for the next generation of Australians.

CONTACT US

Feel free to contact us for any questions:

E: linh.nguyen@southenergy.com.au

T: (03) 8842 6888

W: www.southenergy.com.au