

# Battery Energy Storage Systems (BESS)

## What is a BESS?

A battery energy storage system (BESS) is a big battery, or set of batteries, that stores electricity and works like a large rechargeable battery for the electricity network. It stores electricity when a lot of it is being generated, particularly on sunny or windy days, when solar panels and wind turbines naturally produce more energy.

At these times, there can be more electricity available than people need, especially during the middle of the day when many homes and businesses are using less power. The BESS stores this extra electricity and then releases it later, when demand increases, such as in the evening when people are at home, cooking, heating or cooling their homes.

This process is managed automatically. The Australian Energy Market Operator (AEMO) oversees this system to ensure electricity supply and demand remain balanced.

By capturing energy when there's plenty available and supplying it when it's needed most, **a BESS helps keep the electricity network stable and reliable.**

## The role of BESS in supporting Australia's electricity network

Australia's energy system is changing. As older coal-fired power stations retire, more renewable energy - like solar and wind farms - are being built to support the increased demand for electricity. While renewable energy is abundant, it isn't always available when it's needed. Battery energy storage systems (BESS) help bridge this gap.

## How BESS supports the electricity network

**Improves reliability**
Stores excess renewable energy and releases it when needed helps keep power supply stable and available.

**Reduces pressure on the electricity network**
Balances electricity use and helps prevent outages during high-use periods.

**Supports lower energy costs**
Makes better use of low-cost renewable energy and reduces the need for more expensive electricity during peak times.

**Provides backup during emergencies**
Supports critical infrastructure, such as hospitals, emergency services and water systems, during power outages.

# *Components of a BESS*

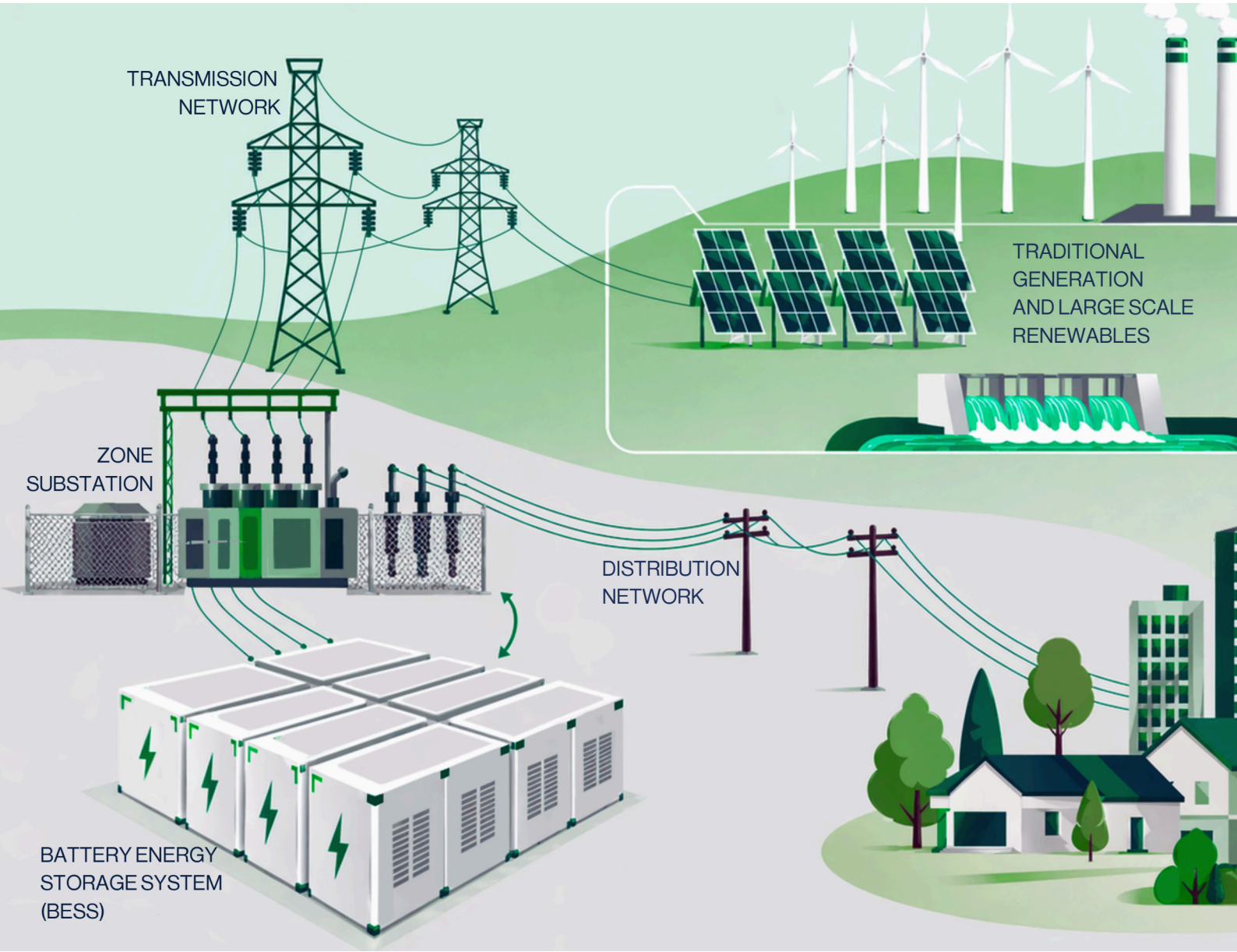
A BESS is typically situated near existing electricity network infrastructure, such as substations or transmission lines. By locating them close to these connection points, there is less need to build new power lines or other supporting infrastructure, helping to minimise additional development in the surrounding area.

A BESS includes battery containers (similar in size and appearance to shipping containers), along with inverters (which convert electricity into the right form for the grid), transformers (which adjust the voltage of electricity so it can be safely transmitted across the network), and cooling systems to ensure safe and efficient operation. Inside each container are smaller components (battery racks, modules and cells) that store energy.

The number of battery containers, and how they are arranged on the site, will depend on the size of the BESS, the characteristics of the site, and the BESS technology being used. Most BESS developments are




compact and can often fit within a relatively small, fenced area, with equipment arranged neatly in rows of container-sized units. This means a BESS typically has a much smaller physical footprint and lower visual impact compared to large-scale generation facilities, making it easier to integrate into existing industrial or rural landscapes.



# *BESS Management*

Safety, longevity and environmental care are built into every stage of an Enervest BESS, from design and installation, to first charge, and through to final decommissioning.

| **Development** *1-2 years* | **Construction** *1-1.5 years* | **Operation** *15-20+ years* | **Upgrades** *As needed* | **Decommissioning** *1-2 years* |
|---|---|---|---|---|
| Planning, environmental studies and community consultation to design the project and secure approvals. | The site is built, battery units are installed, and the system is tested before connecting to the grid. | The BESS stores and releases energy to support the grid, with ongoing monitoring and maintenance. | Battery components can be replaced or upgraded over time to improve performance and extend project life. | The system is safely removed and the site is rehabilitated, with materials recycled where possible. |



## *Safety*

All Enervest BESS facilities are designed to meet strict Australian safety standards (AS/NZS 5139:2019) and all relevant planning requirements. The batteries used are Lithium Iron Phosphate (LFP), a technology specifically chosen for large-scale energy storage because of its high level of stability and safety. Unlike some other types of lithium-ion batteries commonly used in electric vehicles or household devices, LFP batteries are far less prone to overheating and are designed to remain stable even under extreme conditions. This makes them one of the safest battery chemistries available for large-scale projects.

Each battery unit is built with multiple safety features, including continuous monitoring systems, temperature management, fire-resistant materials and integrated fire suppression. The system is also modular, meaning each unit operates independently and can be safely isolated if needed.

Although issues are very uncommon in modern battery systems, Enervest works closely with local emergency services to ensure clear response plans, training and safety procedures are in place for every project.

## *Decommissioning*

BESS facilities are designed for long-term operation, typically 25–40 years. Over time, individual battery units may be upgraded or replaced to maintain performance. At the end of a project's life, Enervest implements a detailed decommissioning plan, required as part of development approvals, to ensure the site is safely dismantled and returned to its former use.

**94-99% of battery contents can be recycled for future use.**

Valuable materials, including metals, are recovered through specialist recycling programs, and remaining components are disposed of in accordance with environmental regulations.

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*lots in store*



*Artist's impression of Enervest's BESS in Cooroy, QLD*

## *Who is Enervest?*

Enervest is an Australian-owned developer specialising in the design, financing and operation of large-scale battery energy storage systems (BESS) spanning utility-scale and distribution connected projects. For more than 18 years, we've been strengthening Australia's energy backbone with practical, scalable, future-ready solutions.

We work closely with Traditional Owners, local councils, community groups, and residents, to develop projects that contribute to local economies and communities through tangible, ongoing investment in people, skills and places.

To learn more visit www.enervest.com.au or get in touch with our team hello@enervest.com.au

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