

# Battery Buyers Guide

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## 1. Introduction



### **Embarking on a sustainable energy journey: The Battery Buyers Guide**

Queensland is a world leader in solar photovoltaic (PV) installations and uptake is expected to increase in the coming years. Some households are now ready to take the next step and invest in an energy storage system to make the most of the solar electricity generated throughout the day.

Battery technology is rapidly evolving, providing more options for solar households to store their own renewable energy, and manage their electricity consumption and bills. Some battery systems, can be configured to provide backup power during a power outage, increasing Queenslanders' resilience during the storm season.

People install home solar battery storage systems for different reasons. As technology advances, scale increases and battery affordability improves, they are expected to become accessible to more households

This guide has been developed in partnership with GHD Pty Ltd to help you understand home battery storage and plan the right system for your home.

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## 2. Understanding home battery storage systems

Home battery storage systems are advanced devices that store excess energy generated by solar panels and are an addition to a solar PV system (solar panel and a solar inverter).

Without a home battery, when your solar panels produce more electricity than your home needs, the excess electricity is fed back into the grid. While you may get paid for the energy contributed, it might not fully offset the costs when your energy usage is higher and you need to draw electricity from the grid, especially during times of increased electricity usage.

Having a home battery can help by storing excess energy for later use, helping to balance energy expenses and a more cost-effective and sustainable energy solution for your home.

It is important to note that home batteries cannot operate without solar panels.

## 3. Why choose a home battery?

Home batteries connected to a solar PV system may offer many benefits, such as increased energy independence, reliable backup power, and potential cost savings. Rising electricity prices and cost of living expenses have prompted many Queensland households to consider whether a solar home battery will benefit them. This section outlines some of the benefits.



### Energy independence

Installing a home battery lets you store excess energy generated by your solar panels during sunny periods and use it when you need it. It means you rely less on the grid, giving you more control and independence.



### Batteries can save you money

Storing your excess solar-generated electricity for use during high-demand times of the day can enhance your energy savings. With the right solar panel system size and home battery capacity, you can better manage your electricity consumption and which helps to reduce your electricity bills.

Considering a battery's initial cost versus the payback period is essential. This is the time it takes for the money you save on electricity bills to equal the battery's cost.



### Backup power during outages

During a power outage, your solar panel system typically won't work to power your home – even on a sunny day, for safety reasons. A key benefit of solar batteries is their ability to provide backup power during grid outages, when configured appropriately. Depending on how they are configured, this helps ensure that critical appliances and systems in your home, such as refrigeration, lighting, and communication devices, remain operational in the event of a grid power outage.

## Community benefit



During periods of high demand on the grid, such as mornings, evenings, or hot days when everyone is using electricity at the same time, using your battery's energy helps ease strain on the grid. By reducing reliance on the grid during peak periods, we collectively help ensure efficient electricity use and contribute to savings for both individual households and the community.

The energy system is complex and simultaneous exports from multiple households may impact the energy network and system. Using a battery solution can relieve pressure on the network, making solar generation more efficient and reducing maintenance and infrastructure costs. This can save you and your community money.

## Environmental considerations



Adding a battery to your solar panels helps you use energy when you need it. Opting for a battery alongside solar panels allows you to store surplus energy, minimising your carbon footprint and supporting climate mitigation. Increasing grid-scale and household batteries in Queensland can assist in delivering more renewable energy.

**Before installing a solar PV system, you need to have approval from your electricity distributor to connect your system to the grid.**

**If you already have solar and are considering making changes or upgrades, you should contact your electricity distributor before making any changes to your current set up.**



## 4. Advanced energy management: Understanding HEMS and VPP

When installing a battery, some households may choose to install a Home Energy Management System (HEMS) or sign on to a Virtual Power Plant (VPP).



### What is a Home Energy Management System (HEMS)?

A HEMS is a digital solution that monitors and controls how energy is generated, stored, and used within a household. Investing in a HEMS can help homeowners to achieve specific goals, such as reducing costs, increasing independence, and cutting down on external energy dependency by allowing greater control over their energy use. As more people use solar power, HEMS are growing in popularity for their potential to increase savings and provide better control over stored energy.

HEMS are made up of a physical device which is installed in your home, and software which is usually in the form of a website or an app that you can install on your phone.

### Understanding HEMS in action

This section looks at the components and features of HEMS, and how they interact with various household systems and appliances.

#### Managing energy use

Managing your energy consumption with respect to time of use (different times of the day) and the price of electricity is very important. For instance, when your home is vacant during the day, and very little energy is consumed, almost all the energy generated from your solar panels will be exported to the grid.

For some homes, smart energy technology like HEMS can actually result in higher energy use or higher bills if the household's energy use patterns, retail tariffs and other circumstances aren't suited to how the technology works. So it's important to look carefully at how the HEMS would operate and your electricity tariffs when deciding whether it's going to be a good investment for your household.

### Time-of-Use (TOU) Tariffs

Considering time of use (TOU) tariffs is vital, especially during peak periods in the evenings when electricity costs are higher. They provide different pricing for different periods during the day. This means that if you can shift your energy to take advantage of lower price periods, a TOU can help lower energy bills.

For some households, when people arrive home from work (e.g. around 6pm) a typical Queensland home can be very hot. Switching on an air conditioner will cool the house but draw a lot of energy to reduce the air temperature. As the sun is very low in the sky, there may be only a small amount of solar energy available so most of the energy needed to serve your home will be imported from the grid. This may increase your electricity bill if you are on a TOU tariff because peak period electricity is generally higher and usually applies in the evenings during the week, when demand is high. However, if you are able to use your battery to supply your home during peak periods you can get significant benefit.

### Efficient appliance usage

Shifting the time of use can help optimise energy use of appliances such as pool pumps, hot water systems and washing machines. A HEMS can simplify this while allowing you to remain in control and enabling you to benefit from the best use of energy in your home. This can save you money on your electricity bill without compromising your lifestyle.

## Benefits of investing in a HEMS

- Monitors your energy consumption and controls your home battery.
- Allows you connect and control multiple appliances (i.e. turning them on or off, scheduling operation).
- Estimates your energy demand to optimise your home battery's usage.
- Considers factors that influence your electricity, such as current and next day weather conditions, energy costs and the grid's ability to deliver electricity.

## Managing HEMS – your choice

If you decide to have a HEMS installed, you can choose to manage your electricity yourself or allow a service provider to do it for you. If you choose to have your service provider manage your system, you could receive some form of compensation in return for control of your devices.

There is growing number of HEMS providers on the market, with a diverse range of offers and prices. HEMS require continuous management and monitoring and when selecting a HEMS, it may suit your circumstances to consider a provider that offers a consistent (e.g. daily), automated ('set and forget'), and smart system.

Compensation may include up-front hardware discounts, reduced retail rates, or fixed and variable rewards. Other financial benefits could include additional energy bill savings. Services provided to your household can include managing and improving usage of your solar and battery systems, and participation in emerging energy technologies.

## Considerations for a positive choice

- Ensure the selected HEMS prioritises security to safeguard your personal data. Since HEMS involve the collection of personal data, it is important that the HEMS you select offers reliable security that protects it from cyberattacks and other threats.

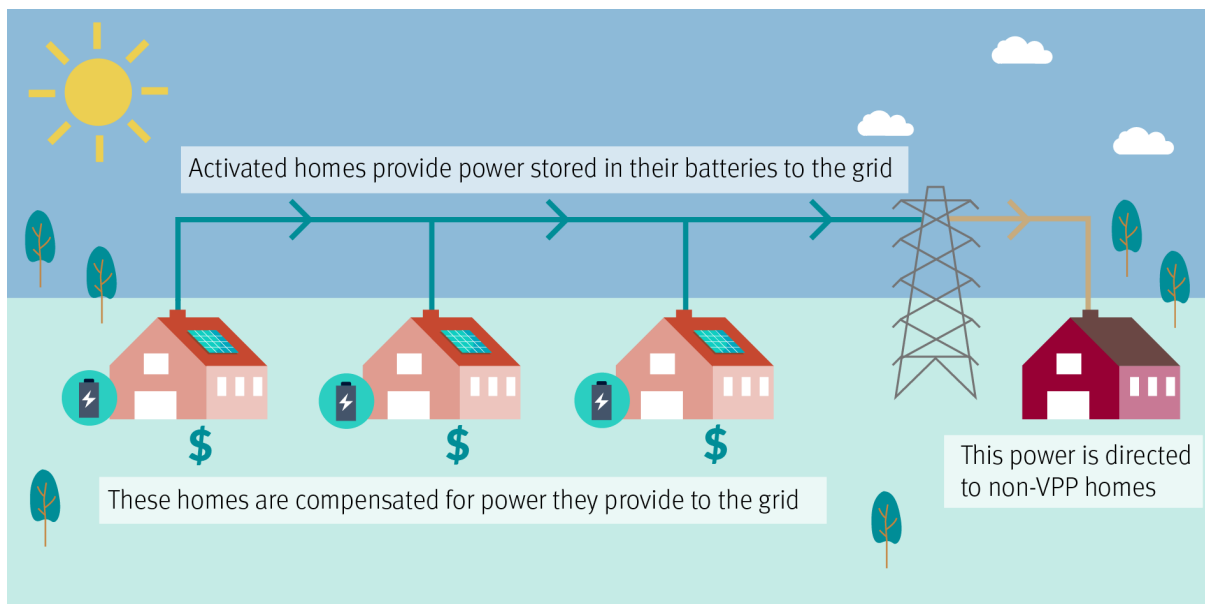
- Be mindful of the overall cost, as some providers may have varying installation and maintenance fees.
- Find out about the number of appliances you can add to your system.
- Review the terms and conditions carefully.

## Virtual Power Plants (VPPs)

In Australia, many households have already installed solar panels and batteries to enjoy cheaper electricity bills powered by clean energy. Depending on your location, you may also be able to participate in a Virtual Power Plant (VPP). VPPs provide another opportunity for some households with solar battery systems to participate more actively in Queensland's renewable energy transition. While not available in all locations, VPPs may also benefit people with batteries as participants are being paid for access to their household batteries.

### What are VPPs?

Virtual Power Plant (VPP) offer some households another way to access more affordable energy deals or to get paid for excess energy.



*How a virtual power plant works*

VPPs are emerging and allow an energy businesses (generally electricity retailers) to pool, or aggregate, the energy produced by a collection of small devices, such as multiple household home batteries. The smaller systems work together to operate like a power station. The VPP provider coordinates the devices to provide power during peak periods or to store grid energy when there is excess supply. The devices making up a VPP can be close together in the same neighbourhood or spread across the network.

### Participation in a VPP

If you are in an area that supports participation in a VPP, it's important to compare your options.

#### Benefits of participating in a VPP

Participating in a VPP program can be a way to:

- be paid for allowing the VPP to orchestrate your stored electrical energy



- use solar electricity more efficiently to support the grid and other consumers
- reduce the impact of surges on the grid and decrease network costs for consumers
- enable greater solar PV and battery uptake in your community.

## Considerations for participating in a VPP

Potential considerations include:

- reduced direct control over your own energy systems
- possible increased usage of batteries, reducing the lifespan of your battery
- you might have less energy in your home battery for use in a power outage
- you potentially lose the ability to shop around for cheaper retailers due to lock-in contracts.

## Important points for participation

Many VPP programs have specific product requirements, and it's important to review these requirements to ensure the system you install can participate in your VPP of choice.

To ensure a VPP is right for you and see which VPPs are available in your area, discuss it with your retailer or installer.

You also need a Dynamic Connection to participate in a VPP, as detailed in the section below.

## Introducing Dynamic Connections in Queensland

A dynamic connection is a type of electricity connection which is now available to customers in Queensland, including those with solar panels and home battery systems. The older 'static' connections have set limits for how much electricity can be exported back to the grid. The limits for a 'static connection are programmed into your inverter. The limits for dynamic connections are sent to your inverter through the internet, depending on electricity network conditions at the time and can be materially higher than static connection limits. If you have a system with the right technology, your installer can help you apply to the distribution network provider for a dynamic connection contract.

### Comparison with static connections

While a dynamic connection will vary dynamically based on the capacity of the network, they provide a range of benefits – including much higher export limits when the network has capacity (e.g. peak evening periods), particularly where your battery is charged by solar. .

### Key benefits for residential customers

Residential customers with solar panels and battery systems can enjoy several benefits from a dynamic connection:

- **Higher export limits most of the time:** Dynamic connections offer higher export limits, currently up to 10 kW, compared to 5 kW on a fixed connection for most systems.
- **Support for larger solar panel and battery systems:** The electrical network can accommodate more solar PV and batteries.
- **Improved network reliability:** Dynamic connections contribute to enhanced network reliability for all customers.

### Considerations and additional information

While dynamic connections provide substantial benefits, there are some considerations to keep in mind:

- **One-time Setup Fee:** There may be a one-off fee associated with setting up a dynamic connection.
- **VPP Participation:** If you plan to participate in a VPP, operators may require you to have a dynamic connection.

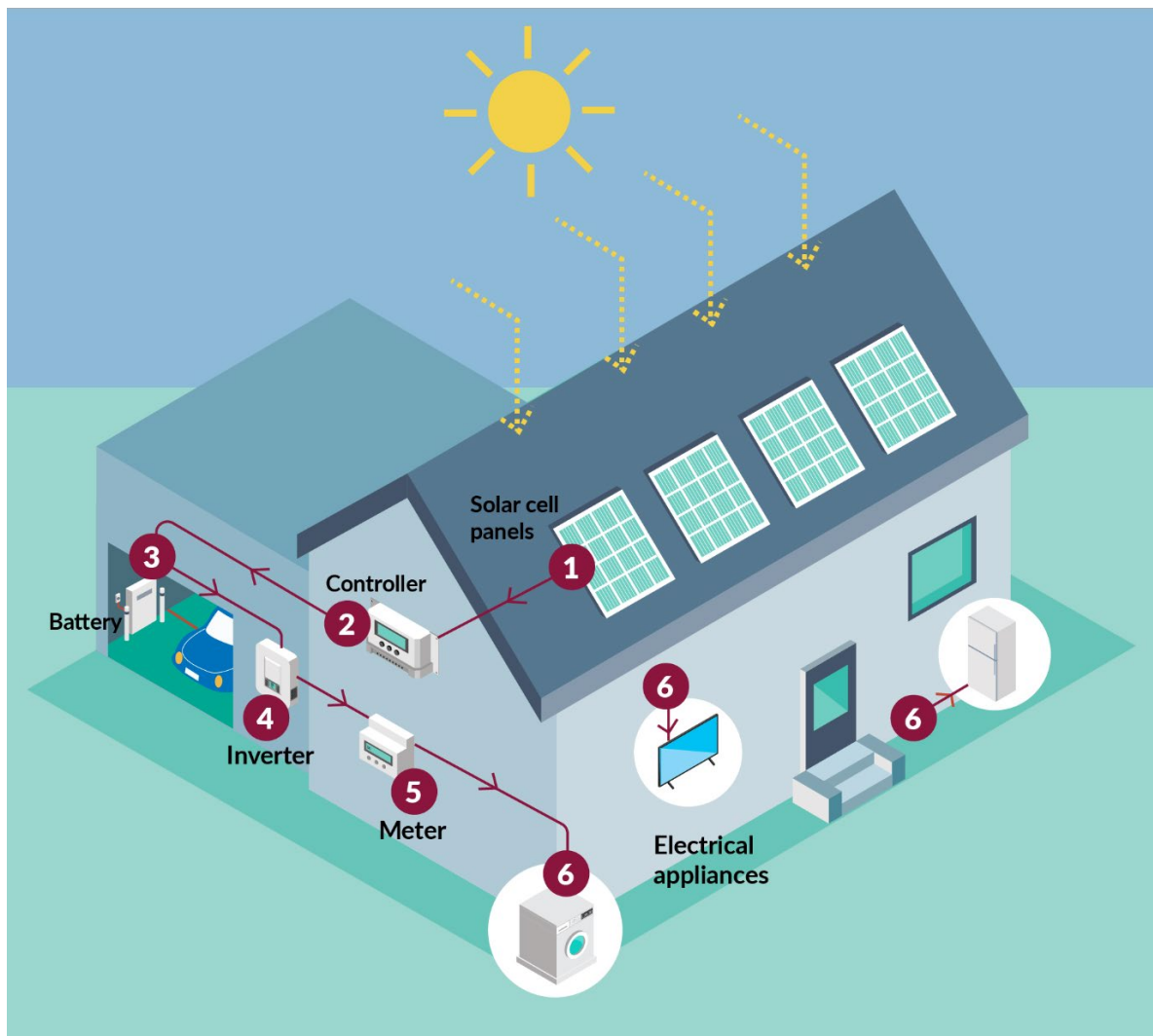
## 5. Home battery basics

The following section answers some of the common questions about solar battery systems and how they might work for you.

### How does a home battery system work?

While the sun is up, energy is generated via your solar panels and used to power your home. In a typical home, this is likely to meet your standard energy usage, and any excess solar energy is then exported to the grid. However, energy consumed during the evening and overnight, which is outside of solar generation, is reliant on the grid. With a solar battery system, excess energy generated during the day is used to charge the battery. This means some of your power usage can also be met outside of daylight hours. Once the battery is fully charged, any excess energy is then exported to the grid.

The energy generated via home batteries and solar panels is delivered as direct current (DC) energy, but household appliances and consumer electronics are powered by alternating current (AC) energy. Therefore, an inverter is required to convert DC generated energy into AC for household consumption.



*How a home solar battery system works*

The size of your home battery will determine what you can do with it. For example, your battery needs to match the energy needs of your home. If your battery is too small, it may not be capable of meeting

your home energy demands. It may also require additional power from the grid, which could reduce the benefits of battery storage.

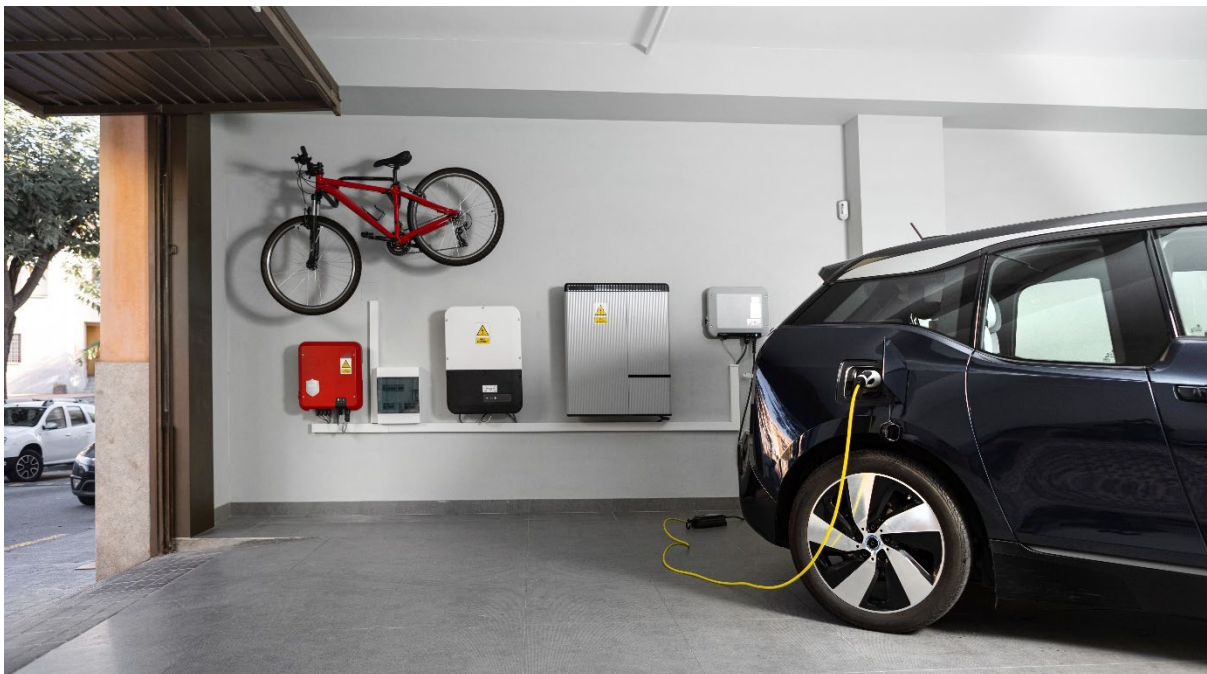
## Batteries

Batteries are the primary component of any storage system, and they operate by converting the electrical energy (including from your solar panels) into stored chemical energy. However, not all batteries are the same and their ability to store energy is dependent on the chemistry and structure of the battery.

The battery options currently available in the market are outlined below.

### Lithium-ion batteries

Lithium-ion batteries are the most common type of battery technology used in solar battery installations. It is also the same type of battery used in mobile phones. With lifespans of up to 15 years and efficient charging, they are the preferred choice for home solar battery systems. They are also compact and light relative to their capacity, and are steadily becoming more accessible to households as their cost continues to decrease.



*Lithium-ion battery in a home setup*

### Other types of batteries

There are two other battery types used in solar battery installations in Australia (these have lower energy densities than lithium-ion).

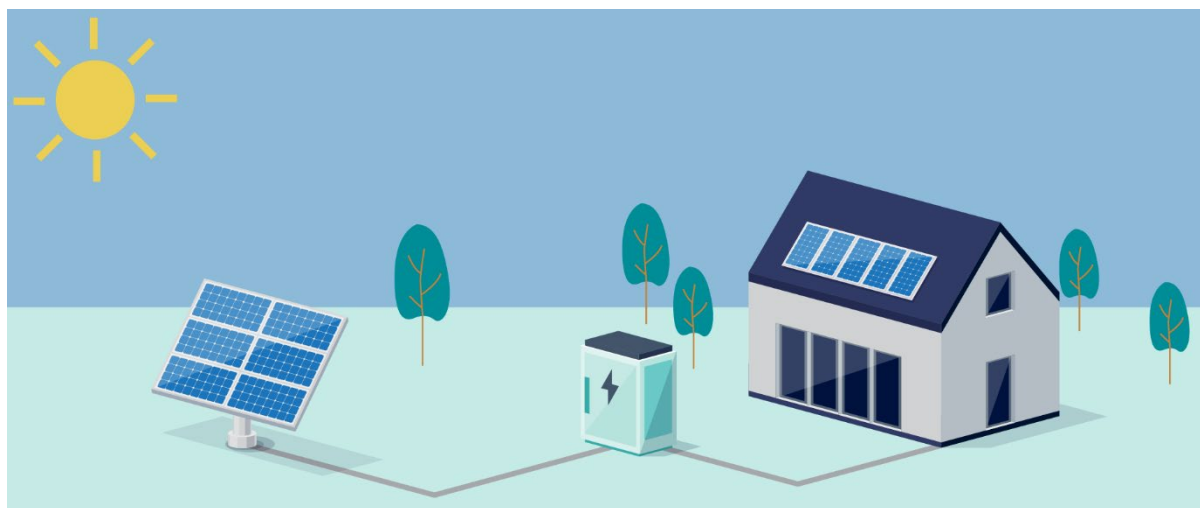
- **Lead acid batteries** – These batteries are often used in stand-alone systems and are not common in grid connected batteries.
- **Flow batteries** – These batteries store energy in a liquid form (electrolyte), rather than being stored in an electrode, like in conventional batteries (i.e. lithium-ion batteries). They are not yet widely available to the residential market.

As the industry evolves, alternative battery chemistries will likely emerge as potential options in the coming years.

## Off-grid systems

Stand-alone power systems, also known as off-grid systems, operate independently of the traditional electrical grid. These batteries store surplus energy generated by solar panels during the daytime and are used to power your home when the sun is not shining (i.e. at night or on cloudy days).

In a stand-alone solar system there is no connection to the main power grid, making these batteries essential for providing a continuous and reliable source of electricity. Stand-alone solar and battery systems are an attractive option for those living in remote locations who do not have access to the electrical grid. In these situations, a stand-alone solution may be more economical than connecting to the grid.



*Off grid system*

## Understanding solar inverters and their role in home battery systems

### What is an inverter and why do I need it?

When solar panels convert sunlight to electricity, it is in the form of DC, which is where the current flows in one direction. Batteries also store energy in DC form. However, the grid and most homes run on a different form of electricity known as AC, with current able to move in two directions. Therefore, an inverter is needed to convert the DC power from your solar panels or battery, into AC power that your household can use.

Choosing a suitable inverter will help maximise the efficiency and longevity of your solar energy system.

There are five types of inverters to choose from:

- **String (standard) inverters** – These are most commonly used for residential installations. The solar power system is powered by strings of solar panels that connect to a single inverter that is converting the power for use in the home.
- **Central inverters** – Similar to the string inverters, central inverters are also powered by a single inverter. However, these inverters are designed to support large-scale commercial solar power systems.
- **Micro-inverters** – Micro-inverters are miniature inverters that are attached to each individual solar panel and are designed to optimise each panel individually, rather than as one system.

- **Hybrid inverters** – When a battery is added to an existing solar panel system, your inverter may need to be upgraded, as your existing solar inverter may not be compatible with both your new battery and your solar panels. Hybrid inverters are used when adding batteries to your solar power system. The hybrid inverter, also known as a multi-mode inverter, works with the battery to coordinate the charging and discharging of the battery. The range is currently limited but will continue to grow with increasing interest in battery storage options.
- **Battery inverters** – If the home already has a solar panel system installed, it is possible to add a battery without touching the existing system. A battery with an in-built inverter (known as a Battery Energy Storage System or BESS) will be set to minimise the import and export from the site by either charging the battery (during peak solar times) or discharging the battery (during overcast conditions or overnight).

## String inverters vs micro-inverters

String inverters are able to manage high voltage energy production due to the single inverter, but a failure will result in the whole system being impacted. The string inverter box is installed on a wall (designated by the installer), while microinverters sit behind each solar panel.

Microinverters are more costly but are considered safer as they operate at a lower voltage and provide design flexibility for different roof layouts. Additionally, if there is a fault, only a section of the panels will be affected as they each have their own inverter.

Other factors such as the amount of shade or roof layout may mean that one option is more suitable for your situation.

If you are thinking about installing a solar system first and a battery system at a later date, keep in mind that the hybrid inverter you install now may become obsolete as inverter and battery technology is progressing rapidly.

If you are still unsure which option is right for you, talk to licenced providers who can assess your situation and provide customised quotes for you to compare.

## 6. Planning your solar battery system

A solar home battery system is a significant financial investment. When considering a battery, it is important to understand the impact that system size and price can have on payback times. While connecting batteries to your solar panel system may provide energy savings, it is the integration of solar generation, batteries, home energy management, and VPPs that gives you the best chance to make the most of your up-front investment.

### Should I buy now or later?

The energy system is rapidly changing, and staying informed about technological advancements will help you make informed decisions about what energy solution is best for you.

#### Option 1: New solar and new battery

Committing to a new solar panel system and battery at the same time offers financial and practical benefits. Not only will you likely see greater financial savings via the solar system, but it could also provide a shorter payback period overall. Both your solar panels and battery will be compatible and optimised to suit your energy needs.

#### Option 2: Adding a battery to existing solar

Retrofitting a new battery to an existing solar panel system is likely to have a longer payback period, but still deliver energy efficiency for your home.

The first consideration is to understand if your existing solar panel system is compatible for a battery. In most cases, you will need to install a dedicated battery inverter with your new battery. In the Australian market, most battery products can now be bundled as a package deal with a compatible inverter, either integrated into the battery unit or installed separately.

Some providers may suggest the following options:

- Replacing the current solar inverter with a hybrid inverter to integrate both solar panels and battery storage.
- Converting the existing solar inverter to a single hybrid inverter which connects to both the solar and battery.
- Connecting the battery to the existing solar inverter, without needing a battery inverter, by fitting a dedicated DC to DC converter between the solar panels and the battery. This option will mean that the battery can only be charged from solar, and not from the grid.

It is important to be aware that these options may not be appropriate to your situation. You are encouraged to seek advice from accredited suppliers.

### **Option 3: Getting a new solar panel system and installing batteries later**

If you are considering postponing the purchase of a battery, be aware that the inverter you choose today may not fully support the features and capabilities of newer batteries that could be introduced in the coming years. Therefore, thoughtful consideration and consultation with experts is crucial to ensure a seamless integration of your solar and battery systems in the future.

If you're looking to purchase a battery-ready solar panel system now with the intention of adding a battery in the next few years, some questions to ask the salesperson include:

- When I add a battery in the future, will it be compatible with the existing inverter?
- Is there any additional equipment (besides cabling) that will need to be purchased and installed in addition to the batteries themselves when the time comes to get a home battery?



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## Choosing a battery

There are a variety of solar batteries on the market, each with its own features and benefits. To choose the best solar battery for your needs, features to consider are:

- **Battery capacity – powering your home when it matters**

The battery capacity refers to the total amount of energy a battery can store (in kWh). The capacity will determine how long the battery can power your home during crucial times, such as at night or during a power outage.
- **Peak power output – reliability when it matters most**

The peak power output represents the maximum power the battery can deliver simultaneously. Whether it's keeping your refrigerator running, charging essential electronics, or ensuring your home's comfort, a robust peak power output ensures reliability when it matters most.
- **Surge capacity – powering essential loads**

Surge capacity refers to the battery's capability to start specific loads, even when the system is operating independently of the grid. Whether it's powering up your pool equipment or an appliance like a vacuum cleaner, surge capacity plays a vital role in maintaining functionality during off-grid scenarios.
- **Warranty and lifespan – value of the investment**

It is important to understand your solar battery warranty in combination with the expected lifespan of the battery. As battery systems degrade, users can monitor their performance to ensure that the BESS aligns with its warranty commitments. More information on warranties can be found later in this section.
- **Charge/discharge cycles – prolonging battery life**

The charge/discharge cycles represent the count of times a battery can be charged and discharged before it begins to lose its capacity. Each cycle involves fully charging the battery and then discharging it to the lowest level permitted by the Battery Management System (BMS). Solar batteries typically have a lifespan between 4,000-6,000 cycles (about one cycle per day for 10-16 years). Ensuring optimal cycle management is essential for maximizing the longevity and efficiency of your solar energy storage system.
- **Depth of discharge (DoD) – managing battery usage**

Depth of discharge refers to the amount of a battery's capacity that can be used before recharging. Discharging a battery all the way until it is empty is possible, but it can damage the battery and reduce the lifespan. Striking the right balance between energy storage and battery longevity is crucial for optimal performance and durability.
- **Efficiency – maximising energy utilisation**

Battery efficiency plays a crucial role in determining how effectively energy is utilised during both charging and discharging processes. Higher efficiency batteries waste less energy as heat and perform better over time. For lithium-ion batteries, look for batteries with efficiency ratings close to 90% or higher.
- **Smart features and remote monitoring – enhancing insights**

Some solar batteries come equipped with smart features like remote monitoring, energy management systems, and user-friendly smartphone apps. These features provide real-time insights into your energy consumption and battery performance.
- **Cost – navigating your investment**

The cost of solar batteries can vary significantly, and you will need to choose a battery that fits your budget and needs. What you pay for your battery system is the sum of the battery cost, battery inverter cost, installation cost and finance cost (if applicable). Installation costs vary depending on a few factors such as where your battery is being installed and whether your switchboard needs upgrading. If you want to compare just the battery cost itself, the battery's capacity (in kWh) is a key factor. Generally, the higher the capacity, the higher the cost. However,

the more capacity you buy, the cheaper your price will cost per kWh. To choose the right battery size for your needs and budget, seek advice from an accredited energy system designer or installer.

## What if my needs change over time?

Certain modular battery systems allow for the option to increase your system's capacity if your energy use or savings increase. Prior to purchase, confirm with your installer whether your existing battery can be upgraded in the future if you think you may need it to.

## What size battery do I need?

Choosing the right battery storage size for your needs will depend on the size of your solar panel system, your average daily electricity consumption, energy usage patterns, whether you want backup during a power outage, and your financial considerations, including budget.

When considering a battery, it is also important to keep in mind any changes you might want to make to your household's energy system and use in the future. For example, switching from a gas water heater to an electric heat pump or adding more solar panels, may require changes to your storage needs.

If you do not already have solar, you will need to size your solar panel system appropriately. Speak to an accredited energy system designer or installer to help with solar sizing.

## What should I look for in my warranty?

It is important that you understand what is included in your warranty terms. To avoid uncertainty, make sure the supplier has explained it to you in detail.

A battery's lifespan is influenced by several usage factors, including:

- the number of cycles
- the charge and discharge rate
- the depth of discharge (DoD) used in its everyday operations.

It is good practice for the installed system to have a minimum 10-year warranty for the whole system and a minimum seven-year performance warranty under daily cycling operation.

Some manufacturers provide warranties for specific time-periods, while others do so for a specific number of cycles based on a pre-defined cycling profile (e.g. 8,000 cycles at 80 percent DoD). Discharging your battery beyond this point may affect your battery's warranty or lifespan. Battery lifespan may last more than implied by a warranty provided the system has been correctly sized and is used within its recommended cycle of depth and frequency ratings.

The workmanship warranty should also match both the battery and inverter warranty (ideally 10 years), so that if a battery or inverter require repair or replacement, the work is free of additional charges.

## Battery performance

A battery's performance will be impacted by the temperature and environmental conditions it is exposed to. Batteries need to be insulated, well-ventilated, and should be shaded from direct sunlight.

## Location

It is important to note that a battery's location and position will need to be determined by a qualified battery storage system designer. There are also several regulations that apply to the positioning of solar batteries to ensure the location is safe and protected.



Generally, an ideal location for a battery is the garage. Garages are often well-insulated from heat, moisture, and dust. Importantly, unlike most other residential areas, they have the space to comply with safety regulations. A battery in a garage may need mechanical protection (e.g. a bollard) to protect it from vehicles. There are also requirements to isolate the battery from living spaces, or habitable rooms, within the house. Your supplier can discuss the requirements to enable the best choice of a suitable location.

If you do not have a suitable indoor location and are considering installing the battery outdoors, do not install it in direct sunlight or in uninsulated, unshaded, metal sheds.

It is also important that battery enclosures cannot be accessed by children, are vermin-proof, and display appropriate safety warning signs and shutdown procedures.

## 7. Financial considerations

### Calculating the payback period

#### What is the payback period?

The 'payback period' is the time it takes for a battery to pay for itself with savings in your energy bills. In some cases, a home battery system may not achieve savings to pay for itself.

Calculating the payback period involves consideration of your electricity consumption patterns, location, energy and solar feed-in tariffs, warranty and life expectancy of your battery, cost, and the performance of your system.



## How do I calculate my payback period?

To calculate a very simple estimation of the payback period in years, divide the upfront system cost by the projected annual savings in your energy bills.

Please speak with your installer and do your own assessment based on your individual energy use and consumption patterns. If you have a warranty that is less than the payback period, the battery system may not pay for itself before the warranty expires.

For a more accurate payback period calculation, you would need to include a range of additional factors, such as:

- actual level of discharge of the battery over the course of the year, while considering energy use patterns and solar generation (where solar exists)
- reduction of battery capacity over its lifespan
- potential future changes in retail electricity prices
- efficiency losses between solar, the battery, and your appliances

A number of online calculators exist that can help you work out the payback period once you have received one or more quotes. These are important because they can help you compare the different quotes. For example, you should try to understand what your 'annual savings' would be depending on whether you use the full battery capacity every day, or what part of the savings are due to the battery itself and what parts are due to installing solar panels.

## Insurance

When investing in solar panels and batteries for your home, remember these key points:

1. **Check your Home Insurance:** Ensure your home insurance policy covers solar panels and batteries. These are valuable assets that should be protected.
2. **Check your Policy Clauses:** Review your policy for any specific insurance clauses related to solar systems. Understand requirements and coverage for battery-related issues.
3. **Be informed:** Before installation, be aware of insurance implications. Make an informed decision to safeguard your investment.

## 8. Buying a solar battery system

Finding a qualified and accredited system designer/installer for your new solar battery system is key to ensuring that your installation will meet your needs.

### Do your homework

Before purchasing a solar battery system, investigate your current home energy usage and consider potential efficiency upgrades which are often the most financially beneficial way to reduce your energy bills. This could include purchasing energy efficient appliances, upgrading home insulation, replacing light bulbs with LEDs, using less hot water, and washing clothes in cold water for example

For customers in South East Queensland, shopping around to find a new energy offer can save you money. Visit the Australian Energy Regulator's Energy Made Easy website to compare offers from energy retailers in your area, and to help you make more informed choices about your electricity services.

If you have optimised your home energy usage and you are interested in installing a battery a qualified system designer and installer can help you calculate the capacity of the solar home battery that would be ideal for you.

### Choosing a battery retailer

While fully qualified electrical professionals can install batteries in Queensland, it is good practice to seek out an installer that is also accredited in the design and installation of home battery systems. It ensures that your battery system is not only functional but also optimised for safety, efficiency, and long-term performance.

Below are tips to consider when choosing a home battery installer:

- Look for an installer that is accredited in the design and installation of home battery systems
- Check their online reviews, ratings, and customer feedback
- Verify their license and certifications
- Evaluate their experience and track record
- Obtain at least 2-3 quotations from qualified installers
- Ask friends and family for personal recommendations
- Look for reviews and recommendations online
- Review your quotes and make sure they meet your needs.
- Check your eligibility and apply for any available rebates offered by either the Queensland Government or the Australian Government. Most government incentive schemes require accredited installers and approved products and have their own eligibility requirements.

Installing a home battery system is a big decision. Like all big decisions, price and quality should be carefully considered before choosing to buy a particular system from a chosen retailer.

It is good practice to seek at least three different quotes for the system size that meets your requirements so that you are able to compare prices, models, and warranties. You can also request that their quote contains as a minimum, calculations on potential savings and returns, HEMS, and add-ons as options and benefits.

Be aware of your consumer rights and protections when a salesperson approaches you over the phone, at your door or in public, and do not pay the full price up-front. It is important to take time to research, plan your system, compare multiple offers and find an accredited energy system designer or battery installer to help ensure the battery system suits your needs.

It is very important to keep in mind that although quality systems generally cost more, the right system is an upfront investment which should pay for itself over time. Better performance over a long time-period is likely to deliver a better payback in the long term.

Working with a qualified provider will often lead to better outcomes overall, even if this requires a more expensive service and greater upfront cost. Choosing cheaper options can result in installations that are unsafe, non-compliant or do not meet your needs.



## Buying a battery checklist

The following list may help you choose the best possible product:

Number	Task	Completed
1	Read this guide and inform yourself about your options and needs.	✓
2	Obtain a minimum of three quotes for systems with similar size and functionality. Ask the retailer about prices, warranties, any specific exclusions or operational conditions for the warranty to remain valid, which warranties are the retailer's responsibility and which are the manufacturers, brand recommendations, and performance guarantees.	✓
3	Ensure that your installer holds appropriate accreditation or certification for design and installation of home battery systems. Search for references and reviews from previous customers or people you know.	✓
4	Educate yourself on your battery system to evaluate your chosen system. This can be done through reading customer reviews and industry and government websites.	✓
5	Ensure your battery system size aligns with your specific energy storage needs and usage requirements: <ul style="list-style-type: none"> <li>• What system size do you require?</li> <li>• What is this sizing based on (i.e. optimal economic size, achieving 90% grid independence, etc.)?</li> <li>• Is the battery intended to work as backup when the grid goes down?</li> <li>• Would you like to charge the battery with grid energy?</li> <li>• Are you looking for the system to optimise the amount of energy that is purchased from the grid by predicting the next day's solar generation?</li> <li>• Do you want to sell battery electricity to the grid?</li> </ul>	✓
6	Consider where your battery will be installed. A shaded, protected, and cool location will optimise your battery's performance. Speak with your installer and see if there are any issues with the property that might affect the cost of installation.	✓
7	What will the monitoring system be like? How will you be able to access battery performance data (e.g. smartphone app)? Will you need a cloud service subscription? What type of data will be provided to you or others? What cyber security protections are in place for your data?	✓
8	What maintenance requirements will be needed for your system and who will do this? Are there any ongoing maintenance costs? Are parts readily available? Does the manufacturer have an Australian office?	✓
9.	If you are seeking funding from a Government scheme or program, check that the battery and installation meets the program eligibility requirements	✓

## Do I need approval from the electricity distributor to install a battery?

Yes. Before installing a solar panel system, your installer will seek approval from your electricity distributor on your behalf to connect your system to the grid. A network connection agreement application must be lodged and approved by your electricity distributor before you have a solar PV system or battery system installed. While this form is usually lodged on your behalf by your solar installer, it's important to understand your electricity distributor's connection process.

If you live in:

- South-East Queensland – your electricity distributor is [Energex](#)
- Regional Queensland – your electricity distributor is [Ergon Energy Network](#)
- Goondiwindi region near New South Wales border – your electricity distributor may be [Essential Energy](#)

To connect a solar system or battery to the grid, your installer will apply to your local electricity distributor, which will require approval. If you are retrofitting a battery to an existing solar panel system, an amendment to the connection agreement is required.

## 9. Working with installers

### Installation warranties

Warranties provide piece of mind. If your new installation is not working as it should, it can be repaired or replaced without further cost to you. It is important to note that the quality of a warranty is only as good as the installer that provides it. Installers and retailers can and do go out of business, which can leave you with a warranty that cannot be honoured. To give you the best chance of having your warranties serviced, look for installers and retailers with long histories and an established name in the industry.

However, even if your installer or retailer does go out of business, under Australian Consumer Law, product manufacturers are still required to honour warranties on their products. Make sure you receive and keep all the information regarding your installation, including the manufacturer details for each component and any additional warranties each component may have.

Usually, the component warranties are the responsibility of the manufacturer, while the installation warranty resides with the retailer or Australian supplier. Ultimately however, under Australian Consumer Law, the importer of the components into Australia has primary responsibility for product warranties.



## What if something goes wrong?

What do you do if there's a problem? Sometimes battery systems don't perform as expected or completely malfunction. This could be due to faulty components, installation errors, environmental conditions, or damage.

Good retailers and installers want happy customers and will do their best to sort out problems as quickly as possible. Providers who are members of a consumer protection scheme are required to have competent processes for dealing with faults, problems, and complaints. There are legal protections for customers if manufacturers, retailers, or installers don't meet their obligations.

If your battery system seems to have a problem, first contact your installer. A good one will promptly respond to you, figure out the problem, and fix or replace it.

If your installer doesn't help or is unavailable, you can contact the battery manufacturer directly or your state or territory consumer protection agency may be able to give you advice and potential assistance.

## What if my installer is no longer in business?

If your installer is no longer in business, you might still be okay. Product manufacturers must honour warranties even if the retailer or installer of the product is no longer in business. Find your product information – which will identify the specific model and have contact details for the manufacturer – and contact them. If they do not help, contact Queensland's Office of Fair Trading for advice.

## 10. Owning a battery

### Looking after your solar battery

When you invest in a solar battery and solar panel system, you want it to last as long as possible and to perform effectively in order to maximise your investment. You can help extend the life of your battery by keeping it clean and well-maintained and learning how to use it properly to avoid placing undue stress on your battery, which may cause it to deteriorate more rapidly.

### Avoid overuse

It is wise not to overuse a battery by fully charging it and discharging it more than 2-3 times a day as this shortens its lifespan. A HEMS or similar app that helps optimise a battery system can usually prevent shortening lifespans through excessive charge and discharging.

Lithium-ion Batteries generally require minimal maintenance compared to other battery technologies. By law, only a licensed electrician (e.g. the installer) can carry out electrical work on the battery.



### General safety considerations

There are some things to keep in mind when installing your chosen battery system:

- Ensure there is appropriate space around the battery unit and its surroundings for access and ventilation.
- Position the battery away from any potential hazards such as pools, taps, pipes, and water features, access paths, and vehicles.
- Make sure there are no objects or flammable objects that can conduct electricity near or inside the battery enclosure.
- Do not store any heavy household equipment on top of your battery and ensure that the area around the installation is clear from obstacles.
- Make sure there is a fire safety plan in place, including the location of fire extinguishers and contact details for emergency services.



## What to do in an emergency

Batteries should be installed properly, operated according to manufacturer's instructions, and not tampered with by unlicensed persons. In rare situations, batteries can overheat or catch on fire which can lead to injuries and loss of life or property.

In a case where there is an incident with your battery or if you notice any unusual signs in the form of swelling, unpleasant smell, fumes, or smoke, do the following:

- If it is safe and possible, shut down the home battery by following the shutdown procedure (it should be in the product manual). Otherwise, locate the main power switch for the home battery and switch it OFF.
- Stay clear of the battery installation area, ensure everyone evacuates the area and remove any personal belongings around the home battery e.g. your car if it is installed in the garage.
- Contact the installer of the home battery to inform them of your observation and wait for them to inspect the battery.
- If your home battery is on fire, Call the national emergency service phone number (000) and inform the operator. Wait for the emergency responders in a safe location.

Other organisations who can assist you if something goes wrong with your battery include (but are not limited to) your electricity retailer, the Office of Fair Trading, industry peak bodies and the Electrical Safety Office.

## Cleaning and maintenance

Keeping your solar battery clean and well-maintained is important. You are responsible for ensuring your battery is maintained according to guidelines provided by your installer.

You should periodically check that your home battery remains free from dirt or debris, insect, and animal infestation. To clean your battery, follow the instructions provided with the system or refer to the manufacturer's documents. In general terms, using a simple soft cloth slightly dampened with mild soap and water (not cleaning solvents and harsh materials) to wipe the exterior of the home battery and ensuring its location is clean should be sufficient.

Scheduling regular service with an accredited installer is good practice, although this may come at an additional cost.

Servicing your battery ensures that you monitor the system's performance and helps you understand if there is anything more you can do to get the most out of your battery for years to come.