ecosmart Solar

The 8 top tips for buying a home solar battery solution

Energy independence and lower bills

ecosmartsolar.com.au

Company Profile

Welcome to EcoSmart Solar, your local, family-owned energy solutions provider. We have been dedicated to making renewable energy accessible and effective for the communities in Central Queensland since 2004.

EcoSmart Solar specialises in grid-connected solar power systems, batteries, EV charging and Hot Water. We are also pleased to offer solar pool heating and air conditioning solutions, customising our offerings to suit your unique needs and environmental conditions. At EcoSmart, it's not just about selling a product; it's about delivering an entire ecosystem of services. From supply and installation to delivery and ongoing maintenance, we provide you with an unmatched reliable after-sales experience.

We take great pride in our product selection including high-quality REC solar panels manufactured in Singapore. We only offer inverters, that have been successfully installed in Australia for a decade plus. We install cyclone rated mounting systems and high quality batteries such the Tesla Powerwall. Rest assured, when you invest in an EcoSmart solar & battery system, you are investing in robust, long-lasting solutions.

Our inhouse team of skilled tradespeople are trained to tailor solar solutions for your home to ensure optimum efficiency and to maximise your longterm investment. Additionally, we offer an obligation-free on-site advice, measurement, and quote service to take the guesswork out of your solar journey.

Jeff Hoare - Ecosmart Solar CEO

Key considerations when buying a Solar & Battery solution

Solar systems with batteries have become increasingly popular over recent years and are expected to become even more so going forward. We predict that a solar/battery combo will be a standard accessory to a residential home in the next year or two.

Several key factors that should be considered when researching and purchasing a solar and battery system or adding a battery as a retrofit to an existing solar system.

Here are the 8 key considerations to be aware of before embarking on this journey.

1

Why get a home solar storage battery?

In the early years, like 2006 when solar had a 14-year payback, systems were only purchased by customers with a lot of disposable income for environmental reasons.

By 2008, the Howard Federal Government added an $8000 rebate into the mix and the payback fell to 7 years. This is when solar took off. In addition, the introduction of generous State Feed-in-Tariffs made the switch to solar more popular.

Purchase motivation from then on was mainly financial as further solar equipment price reductions meant increased Return on Investment (ROI).

Today, a solar-system-only ROI can be as low as 3-4 years, even for top-of-the-range quality solar equipment. A 20-year-plus lifespan for quality solar means significant financial benefits of $30,000 or more over the life of the system. Nowadays, many customers opt for a Solar & Battery combo.

The key reasons for purchasing a battery vary, from energy independence and a dislike of the energy retailers, to fear of blackouts and the desire for long-term financial returns.

TOP TIP: Be clear about why you're considering a solar and battery system when you communicate with potential installation companies. This helps ensure your needs are well understood, enabling the installer to design the most effective solution for you.

2

The best reasons to go for a battery

Typically, it will be at least 7 years for many homes to be able to pay back the cost of a home battery if it is added to an existing solar system. While the ROI period can reduce significantly with a solar + battery + EV charger + heat pump hot water bundle, financial benefits are less clear-cut than with a solar-only system.

So let's go through the battery benefits and financial reality.

- **Blackout protection**

  This can be achieved via a battery purchase. If you have regular blackouts or feel there is a risk of blackouts, you may install a battery to power at least essential appliances from the battery when you lose grid power. For example, if you reside in a bushfire-prone zone or remote area and your battery will power your water pump, charge the phone and essential loads, the battery could make a big difference in such an emergency.

- **Self-sufficiency**

  This is an excellent reason for a battery purchase. Many people want to get batteries to increase their ability to use their own renewable power. If you are likely to export a lot of power back to the grid, particularly at a low Feed-in-Tariff (FIT) then you may wish to store your electricity in your battery.

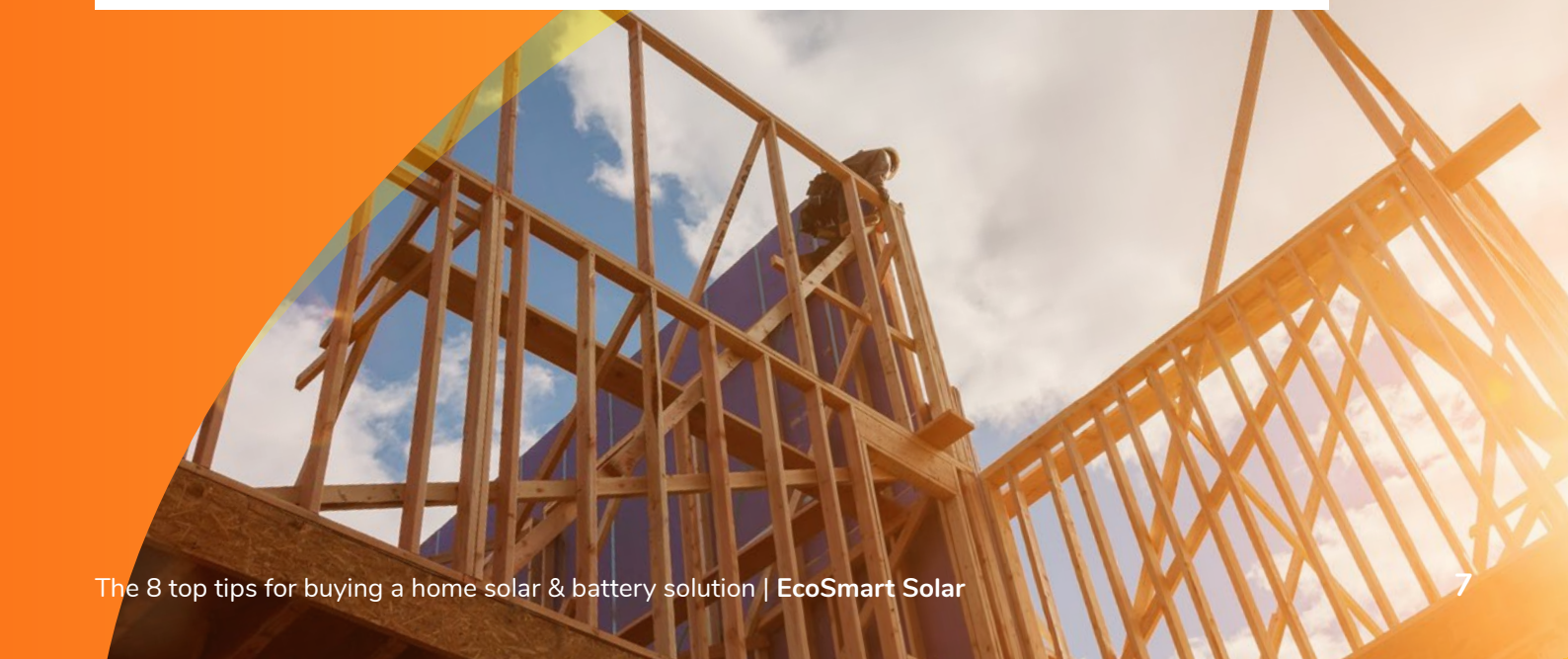
This energy can then be used at night, or other times when your electricity demand is higher than what your solar is generating during the day. While your energy retailer will miss out on their share of the profit to resell your FIT electricity, you will help your energy independence.

A new home deserves a solar & battery combo

- If you're building an energy-efficient home, adding a solar and battery system is highly recommended. Planning for this early on allows you to integrate the necessary cabling into the design, avoiding unsightly add-ons or external conduits later.
- When designing your home, align your roof to maximise sunlight for optimal solar generation. Avoid designs with too many ridges or gables, as they can cast shadows and reduce solar output.
- For the best results, aim for a relatively flat roof with an angle of 10-25 degrees, facing North, North-East, or North-West. This will ensure the most effective solar energy production, particularly in the afternoon.

Forward thinking purchasers just love new technology.

Some people install batteries because they love the technology and are early adopters and thought leaders. They have recognised that solar with batteries, EV vehicles, and the reduction of gas as a heating and cooking source will be part of the lower CO2-generating energy footprint of the future.



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What is the financial reality?

A solar and battery combo is financially more advantageous when purchased together, offering a lower return on investment (ROI) compared to adding a battery to an existing solar system.

For example, with quality solar alone, you can typically achieve a 3-4 year ROI. If you add a battery to an existing solar system, the ROI is usually around 7 plus years. However, nowadays thanks to Virtual Power Plants (VPPs) and electric vehicles (EVs), this ROI can be significantly reduced.

A solar and battery combo without a VPP or EV charging typically has a 7-year ROI. Historically, a 7-year ROI was considered the “sweet spot” for customers when investing in long-lasting home improvements, like solar.

But, if you add a VPP arrangement or an EV charger to the solar and battery combo, and then factor in savings from both your solar energy and battery use, as well as fuel savings from driving EVs instead of petrol cars, the ROI for this combo solution can drop to as low as 4.5 years, and if one has 2 EVs, even lower.

4

How much can I save with my battery?

A home battery saves money by storing excess solar power generated during the day for use on rainy days, evenings, or overnight.

The savings equal the cost of electricity you avoid buying, minus the Feed-in-Tariff you'd earn by exporting excess solar power. Typically, this amounts to around -35c per kWh of battery energy used.

Earn with Your Battery Through a VPP

You can earn significant income by trading your battery's stored energy via a Virtual Power Plant (VPP) subscription, such as Amber. During periods of high electricity prices (up to $50 per kWh), the VPP software can release energy from your battery, earning you $100 or more in a single instance. Over a year, this can add up to $1,000 plus in extra income.

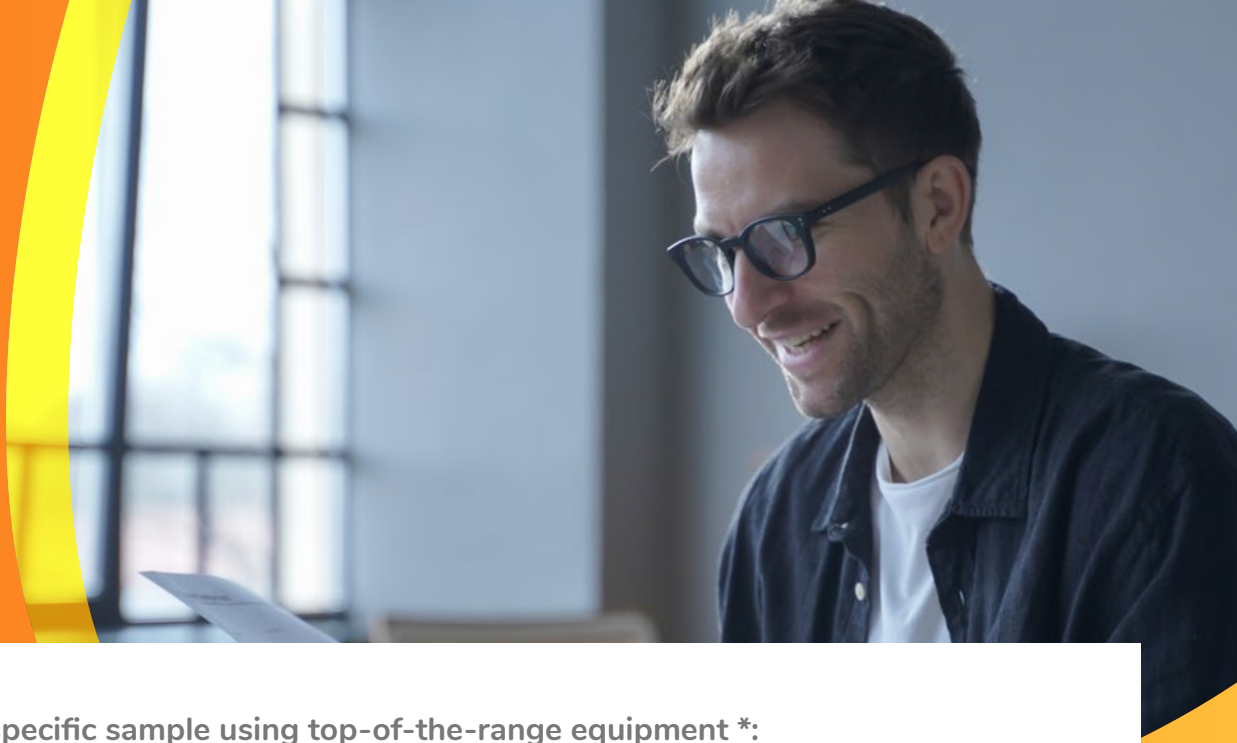
Let's say your 14kWh battery has 13kWh of useable energy. If you use this capacity once daily, the saving would be 35c x 13 kWh = $4.55 per day. Now as the battery can be used and recharged more often than just one cycle per day, we allow $7 per day as the battery's benefit per day in this calculation. So per annum, the battery's financial benefit can be as high as $2,500. Then if one adds the potential VPP income of $1,000 per annum and consider all the other benefits, such as black out protection and savings via solar power being used for EV charging. Thus, a battery makes a lot of sense.

Considering a Battery Purchase?

With electricity prices predicted to rise by another 50% in the coming years, ROI on batteries may improve even more.

At EcoSmart Solar, we offer tailored solar and battery solutions. In high power cost areas, solar and battery combos can achieve an ROI in under 7 years—see our calculation table on the next page.

Savings depend on factors like tariff rates, usage patterns, and VPP arrangements, so consult our experts for a customised proposal.



Here is one specific sample using top-of-the-range equipment *:

Item	Size	Est Purchase & Installation Costs	Est Annual Benefit*
Solar System	12kW	$14,000	$2,800
Battery & VPP	14kWh	$18,000	$2,000
EV Charging	20,000km travel pa	$2,000 (for Charger- 1 off cost)	$2,100**
Total		$34,000	$6,900
ROI with 0 EV			6.6 years
ROI with 1 EV			4.9 years
ROI with 2 EVs			3.9 years

*This is a rough calculation only, as prices vary depending on installed brands and local energy prices

**Assumes owner uses 75% of EV electricity consumed via home solar, the rest is paid for.

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Don’t buy cheap & make sure you get multiple quotes

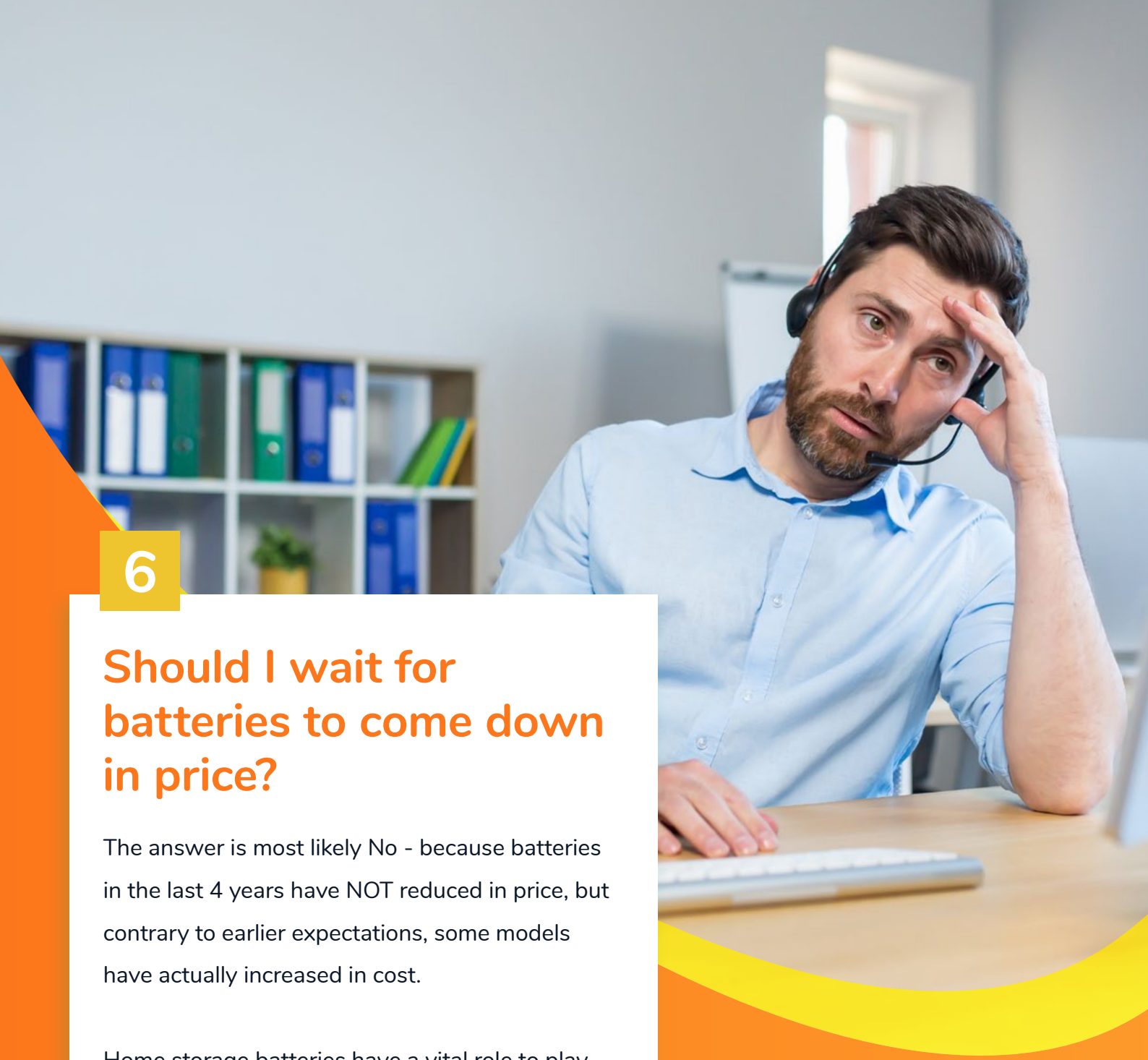
A home battery is a complex piece of equipment, and quality batteries command a decent price point. Usually, you get what you pay for.
That said, not every home solar battery has to be a Tesla Powerwall. For example, BYD and Sungrow make excellent batteries too and more battery brands now offer a wide range of battery sizes and price points.

TOP TIP: When it comes to batteries, and solar in general, buying cheap brings many risks.

Home Storage Batteries are mostly Lithium Ion chemistry. Poorly manufactured batteries have the risk of excessive heat build-up, loss in performance, and worse. Buying a cheap battery with a poor after-sales service level will ensure you look at this purchase with sad eyes in years to come.

Consider multiple system design options and ensure that you receive a top-quality long-lasting solution at a price in your budget range.

Remember that a battery is not a set-and-forget purchase and needs to be supported with a quality monitoring system and the back-up service and support of the manufacturer if required. So, when deciding on the battery, look for local Australian services and support.



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Should I wait for batteries to come down in price?

The answer is most likely No - because batteries in the last 4 years have NOT reduced in price, but contrary to earlier expectations, some models have actually increased in cost.

Home storage batteries have a vital role to play in increasing the use of renewable energy. With close to 4 million solar systems on the roofs of Australia and only 160,000 home batteries installed, the surplus of solar systems can only lead to a great demand for home batteries in the near future.

Solar panels and inverters have reduced in pricing over the past decade as production numbers increased. The past theory has been that costs can come down by 20% or more when one doubles production. But this has yet to be true for home batteries. Why is that, I hear you ask?

EVs and home battery systems both have Lithium as the critical raw material in their batteries. With the exceptional growth of EV car production, despite new Lithium mines being opened, the demand has outstripped supply and Lithium pricing has not reduced significantly for battery manufacturers.

It is anticipated that the supply issues will be with us for a few years to come, and therefore home storage battery prices will not come down in the very near future as they compete with the much bigger EV supply chain for raw materials.

7

How do batteries work?

A solar home storage battery charges like a car battery. The charge controller or battery management system chooses a voltage that is compatible with the battery's voltage.

The battery management system also regulates the PV array's voltage output to supply the right amount of electricity to the battery.

The electric current is subjected to an energy conversion process whilst charging. During this process, charging transforms electrical energy into chemical energy. When discharging, chemical energy is converted back to electrical energy.

Usually, this process also requires some energy, meaning there will be an energy loss during the charge and discharge process. One will never retrieve the full 100% of the energy one has charged the battery with, and one would allow about 5-10% as a loss factor and a return of 90-95% of the initial energy.

Lithium ion is the current technology of choice for on-grid home storage solutions. Lithium-ion batteries are made up of several different raw materials, mainly lithium, graphite, cobalt, and manganese.

Lithium-ion battery technology is constantly evolving as the electric car industry continues to push large amounts of research funds toward their ongoing development. They display a long lifespan, with an average warranty life of 10 years plus. It is the best technology to use right now.

8

Are modular batteries a good option?

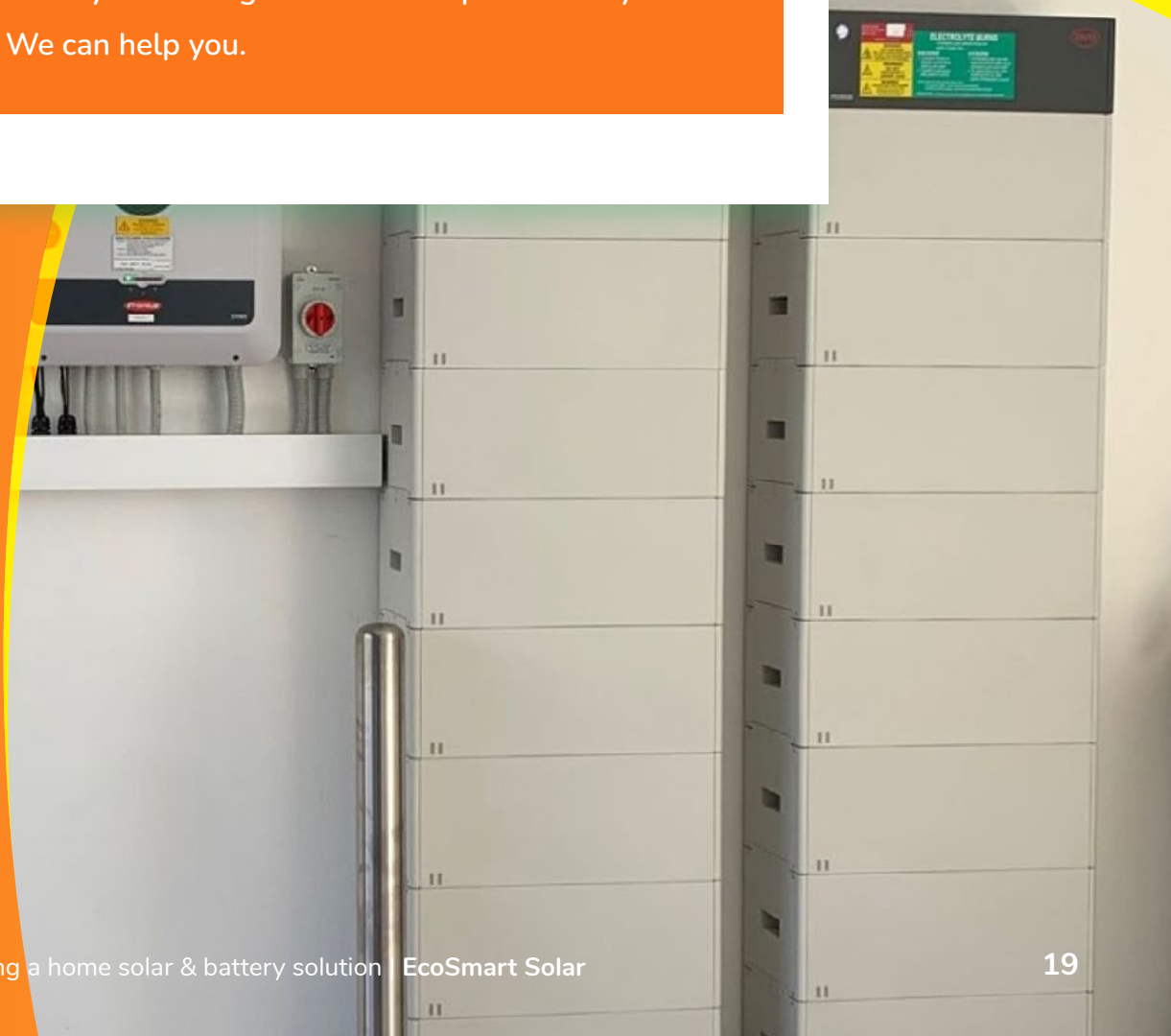
Several manufacturers have modular battery solutions where multiple batteries in sizes of 3, 5, 6, or 8kWh capacity can be connected to provide more capacity and design flexibility.

These solutions are also, in many cases, easier for the installer to handle when transporting and installing. In the past, the module technology has been sold as allowing you to add batteries in the future as your needs change. So home owners regularly purchase a small battery, hoping they can purchase more modules as the family grows.

However, while this is a good idea in general, one has to understand that:

- Battery technology and chemistry change quickly. If you leave it for more than a year or two, the manufacturer sometimes have moved to the next generation of batteries.
- This is because cheap battery models are often incompatible with the previous battery set. So you are stuck with what you initially purchased, without the opportunity to expand the battery.
- Adding new batteries to old ones is not recommended, as differing ages can cause inefficiency and compromise performance due to balancing issues in the battery management system. **BYD modules , Sungrow, and the major brand batteries avoid this problem as they operate independently.**

TOP TIP: Getting an experienced, quality-focused, and knowledgeable system designer in the first place is very important. We can help you.



EcoSmart Solar follows all the important guidance given in this guide.

Contact us for free advice or an obligation free quote.

(07) 4927 1144

sales@ecosmartsolar.com.au

www.ecosmartsolar.com.au

256 Denison Street, Rockhampton QLD 4700

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