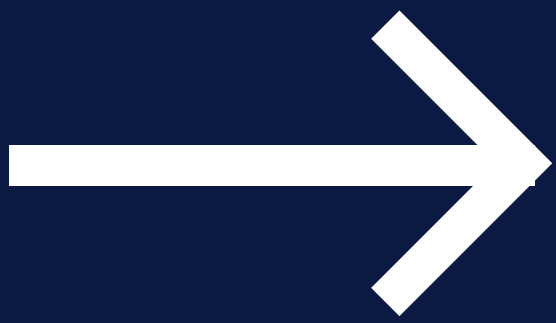
amber
FOR BATTERIES

ABOUT AMBER FOR BATTERIES



An introduction to Amber's new battery technology.

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WHO IS AMBER?

Amber is an energy retailer doing energy differently. We believe that the way the Aussie energy grid is currently set up isn't working for the majority of energy consumers and this needs to change.

Our mission is to help Australia reach 100% renewable energy, by rewarding customers for putting more renewable energy back into the grid when it needs it most.

It's why we're offering a different model, one that gives solar and battery owners access to wholesale prices that let you play a more active and rewarding role in the energy system. We are also building tech tools to let customers make smarter energy moves that accelerate payback on their energy systems.

HOW DOES WHOLESALE PRICING WORK?

While most retailers give you a fixed rate, the price of energy isn't actually fixed - it fluctuates all the time. Sometimes it's up and sometimes it's down. What this means is you're usually paying more for your energy usage and getting paid less for your exports.

Wholesale prices are actually dynamic, not fixed. At Amber we give you access to this wholesale pricing, as well as an app to know what's happening in real-time.

This gives you the power to charge your battery when energy is greener and cheaper and, export when it's expensive, including when the feed-in tariff skyrockets. Or you can leave it up to our smart automation to do it for you.

Visit our **pricing page** to get your personalised bill estimate, based on your daily usage (including the times when you use power), your energy set-up and your household size.

WHAT IS AMBER FOR BATTERIES?

Amber for Batteries combines Amber's battery optimisation technology, SmartShift™, with our wholesale pricing model to help customers maximise value from their solar battery and minimise energy costs.

It's the only battery optimisation product on the market that lets battery owners get the full financial upside of their battery - passing on every cent that your energy is worth at the time when energy is exported.

HOW DO I JOIN AMBER FOR BATTERIES?

To join, simply visit **www.amber.com.au/signup.** Once you've signed up for Amber as your energy retailer, we will enrol your battery so you can start taking advantage of battery optimisation. This usually takes around 10 business days from the time when you provide us with your battery's serial number.

Already a customer?
Head to the devices tab in your Amber app to join!

HOW DOES AMBER FOR BATTERIES WORK?

Amber for Batteries accelerates the payback on a home battery by combining Amber's SmartShift™ battery automation and control features with our wholesale pricing.

The SmartShift™ algorithm creates a personalised plan for your battery that sees your battery export to the grid when energy is most valuable and top-up when grid energy is cheapest.

What you get is more value from your exported solar energy, more renewable energy to use when grid power is dirty and prices are high, and access to higher, fairer FiTs. The factors considered by SmartShift™ when developing your personalised battery optimisation plan include:

- Your forecasted solar production for the day
- Your forecasted household energy consumption for the day
- Forecasted wholesale prices for the day
- Your preferred optimisation/automation mode

The plan is updated every five minutes based on the latest data.

NOTE: The algorithm doesn't know you well enough to make super smart decisions right away.

This explains why in the first month you may see SmartShift make some calls that don't fit with what you might expect in every instance. Simply put, SmartShift is - for the first month - relying on what happened yesterday to predict what will happen today.

After just one month, SmartShift will have gotten to know you and your energy consumption and solar generation patterns well enough to graduate from machine learning university and give you a far more accurate daily plan.

Discover more about Amber for Batteries here, or if you're interested in buying a battery, get a **personalised quote here.**

HOW IS AMBER FOR BATTERIES DIFFERENT TO A VPP? (VIRTUAL POWER PLANT)

	Amber for Batteries	VPPs
Objective	Reduce your monthly costs and maximise the value obtained for your system, in return for additional renewable energy entering the grid	Use your battery to put cheap energy into the grid to offset retailers' costs
Financial benefits	Access to variable wholesale feed-in tariffs that can go up to $15/kWh, accelerating your battery's payback period The only battery optimisation program that allows the battery owner to receive every cent that their energy is worth at the time it is exported (full financial upside)	Battery owner may receive a discount on their battery for signing up Retailer takes cut of any earnings, provides fixed monthly incentive/credit as compensation

	Amber for Batteries	VPPs
Optimisation approach	Unique personalised battery management plan based on your unique load profile, solar generation, plus forecast wholesale prices. Optimisation runs continually, looking for opportunities to maximise value and reduce energy bills for the customer.	All battery actions are fleet wide, rather than based on what's happening at your specific location. Optimisation actions occur irregularly based on needs of the retailer.
Control	Customer can take control at any time, choosing to charge or discharge, or leave Amber for Batteries altogether In addition to being able to export power you can also top up with cheap green grid energy to further reduce your reliance on expensive fossil fuel power Choice of two automation modes depending on preferences No lock in period	Control is handed over to VPP provider, who gets to determine when your battery discharges. Multi-year lock-in period
Restrictions	No max solar size	Typically max solar size of 10kWh

HOW DOES AMBER FOR BATTERIES PROVIDE ME WITH MORE CONTROL?

When you optimise your battery with Amber for Batteries, you get more control over your battery and your energy costs. Here's how:

- The power to export, charge, consume and preserve your battery at the press of a button, via the Amber app.
- If you prefer to be more hands-off, select your preferred optimisation setting, based on what's more important to you: a fuller battery or more export opportunities.
- You'll get the power not only to export energy but also to top up your battery from the grid when it's greener and cheaper, so that you can rely on cheaper, greener stored energy during peak price periods.
- You will have access to a wide range of data that allows you to make more informed decisions about your energy usage, costs and green impact, including the real-time cost of energy, the percentage of renewables in the grid, the impact on your bill from any manual interventions with your battery, as well as a view of what's planned for your battery in the coming hours.
- You can disable automation at any time.

WHAT'S THE DIFFERENCE BETWEEN THE AUTOMATION MODES?

Amber for Batteries gives you a choice of two automation modes, depending on your preferences.

EARNINGS OPTIMISER

This assertive mode is all about getting you maximum value for your battery's energy. In Earnings Optimiser, your battery pays close attention to changes in wholesale energy prices, continuously hunting for opportunities to make the most of price fluctuations.

The price threshold at which your battery will avoid charging from the grid in Earnings Optimiser mode is higher than it is in Battery Booster, and the FiT at which it will avoid discharging to the grid is lower, meaning interaction with the grid could happen more times throughout the day. The goal is to earn you more from your energy set-up and drive down your costs.

Every time SmartShift generates a daily plan for your device in Earnings Optimiser mode, it will assume your battery can be fully charged and discharged **up to** twice per day.

BATTERY BOOSTER

In Battery Booster mode, SmartShift prioritises maintaining your stored battery power, only exporting when there's a significant premium to be made. Forecast FiTs have to be higher than they are in Earnings Optimiser for your battery to feed into the grid.

Your battery looks for opportunities to cheap charge your battery from the grid, so you'll have cheap green energy stored when you need it - however, the price threshold at which it will stop charging from the grid is lower than in Earnings Optimiser.

Note: No matter which automation mode you select, SmartShift will not discharge your battery if it has less than 25% energy left. However you can still self-consume your battery energy below this threshold.

WHAT DO THE DIFFERENT MANUAL CONTROL OPTIONS DO?

DISPATCH BATTERY

By opting to dispatch your battery, you are directing your battery to discharge energy. The goal of this is to export energy to the grid. Energy discharged from your battery will first be consumed by appliances in your home, with the remainder exported to the grid. Energy exported to the grid will be sold at the current market price.

Example use case: You've seen a price spike in the app and you want to sell your power to make an extra buck. Hit dispatch and watch your earnings tick up!

CHARGE BATTERY

By opting to charge your battery, you can top up your battery's reserve levels from the grid at times when you need some extra power.

Example use case on next page.

Example use case: You're having some friends over for a Sunday lunch in the winter time. You want them to feel warm and cosy, so you decide to keep some extra power in your battery for use to keep the electric heater going when they arrive.

PRESERVE BATTERY

Hit Preserve Battery to ensure that your battery's stored energy doesn't dip below the current level for a certain period of time. Preserve Battery essentially cuts off your battery from your home and solar system, ensuring all excess solar gets sent to the grid, and you use grid energy for any home energy usage during that period.

Example use case: Perhaps you've seen some bad weather on the horizon, and you're nervous there could be a blackout, so you want to maintain your battery's current level of charge. Alternatively, it's early morning and you want to send your excess solar generation to the grid and get a higher FiT, rather than later when they may drop as the amount of solar in the grid rises.

Another use case is for those with EVs, who can use Preserve Charge to avoid their EV draining their battery when it charges. Preserve Charge allows you to stop the energy in your battery getting transferred to their EV during charging, so you can instead choose to charge your EV from the grid when it's green and cheap.

Final manual control option on next page.

CONSUME BATTERY

Consume Battery stops SmartShift™ from charging your battery from the grid or discharging it to the grid. In other words, it makes your battery operate in self-consumption mode - its standard mode of operating. If your household energy consumption is greater than your solar generation, you'll consume energy from the battery. If your solar generation is more than your energy consumption, your solar will get stored in your battery.

Example use case: Select Consume Battery if you don't want to charge from the grid, or discharge to the grid, but you still want to use your battery.

Note: After you deploy any of these control features, your battery will revert back to its daily automation plan. However, the plan will now dynamically adjust to take into account the impact of your intervention, ensuring that the new state of your battery is taken into account as it looks for the best way to minimise your energy costs for the rest of the day.

HOW DOES AMBER FOR BATTERIES IMPACT ENERGY COSTS?

As most solar owners know, Feed in Tariffs set by energy retailers have been falling for some time. The Victorian Minimum Feed in Tariff has gone from 10.2c/kWh in 2020, to 6.7c/kWh in 2021, to 5.2c/kWh in 2022.

Wholesale FiTs such as those offered by Amber fluctuate based on the level of energy demand on the grid and renewables in the system. Solar and battery owners are best positioned to make the most of this variability.

Amber for Batteries is designed to maximise the value you can get from your solar and battery by giving you access to this wholesale pricing, which is the same as the big energy retailers get paid. automating your system to intelligently make the most of wholesale energy pricing.

As a result, most SmartShift users find that they save up to $500 a year with a standard system on top of the savings generated by having solar and a battery, with the opportunity to earn up to $50-90 in a day when a wholesale price spike occurs.

If you'd like to see how Amber for Batteries impacted the costs of customers in different states, read more here:

COLIN TAYLOR

SOUTH AUSTRALIA

MARTIN MACDONALD

QUEENSLAND

GEOFF JACOBS

NEW SOUTH WALES

ANDREW LEAN

VICTORIA

WOULD I BE AFFECTED BY NEGATIVE SOLAR FiT?

The wholesale price is driven by supply and demand. When the wholesale price (and therefore your FiT) goes negative this means that the grid is oversupplied with energy by comparison to the amount of demand. The wholesale price dips into the negative range to discourage generation during these times, and to help keep the grid in balance.

The good news is that the value most Amber for Batteries get from access to wholesale prices and battery optimisation far exceeds the value lost through exports when feed-in tariffs are negative.

While there is currently no way to stop exporting solar energy to the grid during times of negative FiT, we are working on a feature as part of Amber for Batteries that allows you to curtail (=limit) solar exports to the grid during periods of negative FiT.

Solar curtailment is when your system will automatically stop exports during periods of negative FiT without the need for additional hardware - while still generating the energy you need for your home. This requires us to integrate with a variety of inverter brands, but we're making progress!

Check out this FAQ to get up to speed on the latest.

In the meantime, increasing household energy consumption is a great way to soak up that excess green solar energy you are producing and avoid exporting during times with low or negative FiT.

Here's **a guide to which appliances typically use the most power in your home** and are therefore most helpful in load-shifting. It might also be worth it to have a think about investing in further electrifying your home (e.g. by changing your hot water or heating systems). You can learn more about **maximising your solar usage to reduce negative exports in this blog.**

HOW WOULD MY BILLS LOOK ON AMBER FOR BATTERIES?

In general, we see that Amber for Batteries customers tend to save $300-1300 a year with a standard system. This is one of the reasons why the South Australian government supported the development of SmartShift™ and Amber for Batteries back in 2020, with then SA Energy Minister Dan van Holst Pellekaan saying: “Households and small businesses are set to be the big winners from the smart technology being trialled by Amber Electric.”

Exactly how your bills would look on SmartShift™ depends on your system and the season / volatility of prices in your state.

Check out **www.amber.com.au/pricing** and let us know a little bit more about your system and we can tell you what sort of savings you are likely to see.

In the meantime, check out our case studies provided for an insight into how Amber for Batteries customers in each state to minimise their energy cost and maximise the value from their solar and battery system.

HOW MUCH DOES AMBER FOR BATTERIES COST?

Amber for Batteries is free for those who sign up to Amber as their energy retailer. Amber charges a $15/month subscription fee to access wholesale energy prices and our battery technology. Amber makes no money on your energy usage or exports, and this subscription fee is our sole revenue to run the retail side of the company and develop our battery technology. There's no lock in period.

WHAT DO CUSTOMERS HAVE TO SAY?

If you'd like to hear from Amber customers currently using Amber for Batteries to optimise their batteries, **check out our blog for more case studies** or the **solar and battery page.**

WHAT IF MY BATTERY ISN'T COMPATIBLE WITH AMBER FOR BATTERIES?

We are constantly integrating new batteries with SmartShift based on customer demand. At present, the following batteries are eligible to join the program:

- Tesla Powerwall
- LG Chem with SolarEdge inverter
- SolarEdge
- AlphaESS
- Hive

In the near future we will be integrating with Sungrow batteries.

Plus, the good news is that if your battery isn't in either of the lists above, it's quite possible that we will add it to the list in the coming months and years.

We have also developed partnerships with other battery optimisation companies such as Evergen who may be able to assist you while we build out our tech for your setup. Evergen's Intelligent Control is compatible with the following battery brands:

- Energizer
- Everready
- Hive
- Huawei
- Redback
- Solax

Please get in touch to see if you're unsure if we have a compatible partner for your battery.

In the meantime, we do recommend joining to take advantage of wholesale prices regardless of battery eligibility, as the wholesale pricing model is beneficial for battery owners in general. This is because it's likely that with a battery you'll mostly draw energy from the grid in the later evening or early morning when wholesale prices are typically lower than retail rates.

Here's how: The solar you generate during the day will be used to meet household energy demand, with any excess filling your battery. Once your battery is full, extra solar energy goes to the grid as usual. For those with average-sized systems, this tends to be later in the day, when wholesale FiTs tend to be higher than they are in the middle of the day.

Your stored battery charge will tend to cover your household needs for at least the early evening period, when wholesale usage rates can be a bit higher.

In this way, you can take advantage of high and low wholesale rates with Amber and your battery.

The above assumes a fairly standard system (~6.6KW solar and ~10KW battery). If you have a small battery or an extra large solar system compared to your battery storage capacity, we suggest you look at how Amber works for Solar customers. Unless you have higher usage to soak up your solar, you will likely be exporting at times when wholesale FiT can be particularly low in the middle of the day.

If you would like to speak to someone in the team about your set-up and suitability for Amber's model, please feel free to contact one of our solar and battery experts on **solarandbatteries@amber.com.au.**

I DON'T HAVE A BATTERY YET. CAN YOU HELP WITH THAT?

At Amber we believe in putting the power back in our customers hands. This includes setting you up with a system that gives you more independence and more value from your energy.

We work with a network of trusted partners to deliver a quality and competitive quote for your solar and/or battery system.

With a compatible setup, you can use Amber for Batteries to top up your battery when prices are low, and use or export your energy when they're high, taking your savings to the next level.

To get a personalised quote, **tell us a bit more here.**

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If you have any unanswered questions, please reach out at **solarandbatteries@amber.com.au.**