

Consumer FAQs: What smart solar reforms will mean for the power system

What are distributed energy resources?

Distributed energy resources – or DER – are devices capable of producing, storing or managing energy at homes and businesses, sometimes referred to as being ‘behind the meter’ devices. They include things like rooftop solar PV, batteries, electric vehicles and energy management systems you might operate through your home Wi-Fi system.

What role do these resources play in the power system now and in future?

Australia leads the world when it comes to solar uptake. Around three million households now have solar PV systems and that is expected to double over the next 10 years as consumers adopt new technology that is reducing both bills and emissions. Australia’s power system is undergoing a rapid and major transformation and DER will play an even more important role in the energy grid of the future. In the next decade, the Australian Energy Market Operator (AEMO) predicts half of all consumers in the national electricity market will be using some form of distributed energy resource.

What’s the challenge we face?

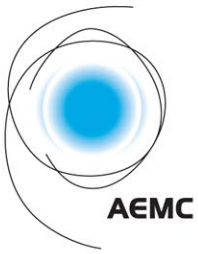
The increasing popularity of solar rooftop systems means that more people want to export the excess energy they are generating to the grid. Because solar relies on sunshine, this is all happening in the middle of the day – though we mostly use energy in the morning or at night. The distribution networks we have now weren’t built to cope with this level of two-way traffic. In some parts of Australia, those wanting to install solar are being told they are unable to export to the grid at all. In some places, networks are blocking power exports because the grid is under strain, meaning that solar owners earn less money and less renewable, cheaper energy gets into the system. This means that solar is increasingly going to waste. We want to address this by planning in a sustainable way so the grid can handle more solar, batteries and electric vehicles. This will put downward pressure on electricity prices and help decarbonise the energy sector faster.

How are we proposing to integrate solar into the power system?

We are putting obligations on power network companies to provide the services that solar households want. They will no longer be able to put blanket bans on customers from sending solar energy back to the grid. Networks will have to report on how they are delivering on expectations to deliver more solar. We are also allowing (but not obliging) networks to offer incentives for the owners of solar and other DER to shift their consumption to use more of their own power and to open up opportunities to export energy to the grid at other times of the day and night. This will enable power networks to offer a range of options – including a basic free service – to encourage solar owners to limit solar waste, save money and benefit the grid. We have included mechanisms to protect consumers, including oversight by the Australian Energy Regulator. All new network plans will be scrutinised and signed off as being in consumers’ interest before they can be applied. Networks will have to consult widely and test and trial the options they put forward.

Does this mean solar owners face a mandatory charge to export solar?

No. Networks will be allowed to offer paid export plans – but they’ll also need to offer a free basic export service and must stop putting blanket bans on customers sending solar back to the grid. If you chose a paid plan you could earn more at some times and less at others. But you could offset any lower earnings by changing how you use your energy, like using a timer on your washing machine or air conditioner to use more of your own solar during the day. You could also earn by using a battery to store energy and send it to the grid when the price is higher. The power would be in your hands. A paid plan also doesn’t mean that a customer would receive a bill for what they export. Any package would be built into



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whatever retail deal you choose. It is important to remember that before any new pricing plans could be introduced, it will be up to the networks to justify their proposals to the Energy Regulator after consulting with their customers about what would work best for them. Each network will develop its own plans for consultation and approval and these will be different depending on where you live, the capacity of the network now, how much solar demand there is in the area, and the preferences of different state or territory governments.

What does this mean for those with and without solar?

Solar will remain a good investment. Our modelling shows that even if networks got approval to charge in the upper range, solar owners would still earn 90% of what they do now even before saving any money by changing how much energy they self-consume. But they could offset that cost if they change their pattern of consumption to enable them to use more of their own energy. Solar owners are likely to benefit less in the future unless we upgrade the grid in a smart way to enable more exports. If everyone on the network is blocked from exporting 10% of the time, that would increase system payback periods by about 10-12 months. If they're blocked for 25% of the time that increases to about 15 months and if they're blocked half of the time, you're looking at up to two years longer to pay back your panels. So, those whose exports are limited now could earn more under these reforms because networks will no longer be able to put blanket export bans on them. On average, most Australian households – the 80% of customers without solar - would likely save about \$15 a year.

Will solar owners need to get a battery?

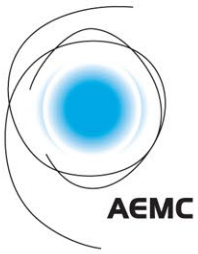
These reforms will reward people who want to install batteries as well as those who don't. Smart devices and systems to help you shift energy use are already available without requiring an investment in batteries. These include pool pump timers, delay start functions on dishwashers, and automated systems that control solar inverters to send energy when it's most beneficial to the grid and the household budget. All of this will be as easy as using a mobile phone. If your budget allows, buying a battery that lets you control when it charges, and discharges would let you spread the use of your solar generation over a longer period. The easiest way to increase the benefits of your existing solar system is to use more of what you generate – like heating or cooling your home during the day.

Doesn't solar already bring down energy prices and emissions for all?

Yes, it does help do that and that's why these reforms are important because they will allow more solar into the system that ultimately benefits everyone. Rooftop solar has helped reduce wholesale prices. But wholesale prices are only one part of a total electricity bill, with network costs, subsidies provided to renewables and retail margins making up the rest. Non-solar owners in NSW, for example, already pay on average \$100 a year for solar through green scheme costs on their energy bill. These reforms mean that when rooftop solar imposes a cost on the system that could increase that network component of your bill, that cost can be recovered from those who benefit most. Those without solar do benefit from lower wholesale energy costs but they pay a greater share of network and green scheme costs because they can't save or earn money from solar.

How can consumers ensure any pricing plans are appropriate?

If a network business wants to introduce export price plans, they will need to consult extensively with customers and have a transition plan in plain English detailing exactly what they are proposing approved by the Australian Energy Regulator. The Regulator will make the final decision on whether these pricing structures are in the long-term interests of consumers. In September 2021 it will begin a consultation process on developing a



guideline for network pricing structures and how networks should develop their proposals moving forward.

How will consumers earning less at times encourage more solar?

If we don't make these changes, solar will become a less attractive investment as fewer people will be able to export energy and those who do will likely be limited in the amount they can export and earn. If we shift the solar around to when it is needed, we can get more out of the poles and wires we already have, people can get more out of the solar panels they already have or want to buy. Upgrading the grid so it can handle more solar in a smart way will keep costs down, keep rewarding people for investing in solar and make batteries more cost-effective. Under our package, solar will still be a good investment. The ACCC found that based on 2020 feed-in tariffs, solar owners pay 30% less on their energy bills despite using more electricity. NSW regulator IPART found that solar owners could cut their bills by a further \$300 by using 20% more of what they generate.

How will changing the way network services are priced create rewards?

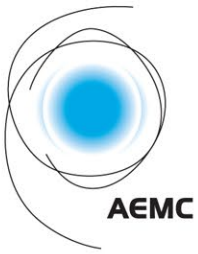
One of the things networks could offer is paying you to export to the grid when there is high demand for electricity – like at 6pm in the evening. This would be easier to do if you had a home battery. But the other thing you could do is change your energy usage to use more of the energy you generate when the grid doesn't need it. This means you pay less for consuming energy from the grid at peak times and don't send energy to grid when it doesn't help the grid. Our package of reforms allows networks to devise a series of options for consumers and each network will be free to come up with a plan that meets its specific needs and works for its customers. The Energy Regulator will have to approve any plan.

Why act now?

It will take time to design a solution so planning ahead means we can prepare in an orderly way and give everyone time to have their input, adjust to any change and make sure transition plans are in place. Close to three million homes and small businesses now have solar and the rate of increase is speeding up. In past six years it has nearly doubled, and the amount of distributed energy resources as a whole is expected to double or even triple by 2040. If we make changes now, we can avoid paying more for crisis solutions further down the track.

What are you expecting the result to be?

Over time, more new customers with distributed energy will be able to connect to the grid and existing customers can access the grid to export if they choose. At home, you will be able to maximise the benefits of your solar – either by using it yourself or sending it to the grid when people need it and want it. You'll be able to save money by changing your consumption of solar using smart devices like apps or timers that control your appliances or send it when it's needed by using batteries. And smart inverters will enable you to adapt your system to grid conditions and control your system to send solar when it works best for both you and the grid. Most of this will be seamless and as easy as operating a mobile phone. At a network level, there will be more smart technology to better manage supply and demand on the poles and wires and better manage voltage. And that means fewer costs in upgrading the network which benefits all energy users – whether they have those systems or not.



How did the requests to change the rules come about?

The requests follow AEMC calls for reform in 2019. We flagged that the rules must keep pace with the amount of distributed energy coming into the system and could better support integrating these new technologies so that all electricity users can benefit. The Australian Renewable Energy Agency then set up a work package under the Distributed Energy Integration Program which involved the AEMC, consumer representatives, industry associations and other energy market bodies. There has been extensive collaboration over a nine-month period and discussion as part of that program about the issues facing the system and how we could adapt. The requests to change the rules came from the Total Environment Centre, ACOSS, St Vincent de Paul and SA Power Networks.

How do consumers pay for electricity distribution network charges now?

Electricity bills for energy consumers have four cost components: the wholesale cost of electricity, network costs, the cost of jurisdictional schemes, for example green programs that subsidise the purchase of renewable technology such as solar panels, and retailer costs and margins. Distribution networks set their prices for the services they provide, such as maintaining poles and wires and managing their systems safely. They charge these prices to electricity retailers who then decide how to pass them on to consumers via their electricity bill.

Who decides what electricity distribution networks can charge?

The Australian Energy Regulator sets the amount of money networks can earn overall and networks apply to the regulator to re-assess the amount of revenue they require. Under the smart solar reforms, networks will still need to put forward their revenue proposal – as well as how costs are apportioned to consumers – for approval to the Regulator.

How will networks operate differently to improve export services?

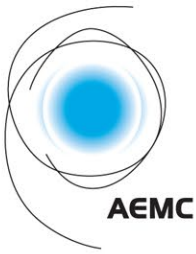
We expect they will use smart software to dynamically manage the network to allow the most solar possible at any given point in time. This technology already exists – our reform package gives networks a reason to make it part of the way they do business. This will mean they can let people know when its most advantageous to take from the system in charging their electric vehicles and other batteries and when they should give back to the system by exporting their stored power. Networks can also use technology to better manage and control voltage levels remotely. They can also do other things like encouraging community batteries and educating customers about smart energy use.

Why don't we just invest in community batteries instead?

Rewards and paid options are just one tool to use the grid smarter – networks could do other things too, like education programs to change consumption patterns and tech solutions to help better manage voltage via transformers or manage solar exports dynamically. They could also encourage community batteries. This is about having a number of different options to drive smart solar. These reforms will complement community batteries and virtual power plants because they include battery incentives. Other recent AEMC changes will also make both small and large-scale batteries more cost effective.

Do large generators pay to use the distribution network (poles and wires)?

Yes. Large generators like coal and gas plants or large-scale solar have to pay to use the grid too – they just pay differently. Comparing these to home solar is like comparing apples and oranges. If a large generator wants to connect to the grid, they have to pay for the infrastructure needed to connect them. And when congestion concerns, they are



constrained off the grid so they can't export their power. They also have to pay if their generator causes an issue on the network. Any larger generators that use the distribution lines (poles and wires to your house) – like big factories for example – will all be subject to the same rules as homes and smaller businesses under this package of reforms.

Who determines the feed-in tariffs paid for exporting solar to the grid?

Most states and territories set minimum benchmarks for solar feed-in tariffs and electricity retailers operating in those jurisdictions decide whether to offer feed-in tariffs and whether to pay above this rate. Retailer tariff offers and the way they are structured can differ considerably. In some jurisdictions, different tariffs may now apply depending on the time of day. Check with your retailer about what they offer and compare other offers through reputable comparison sites like the Australian Government's Energy Made Easy website.

Why are feed-in tariffs usually lower than prices for consuming electricity?

The benchmark minimum rates for feed-in tariffs represent the wholesale electricity price – or the same price retailers would pay if they bought electricity from a large generator. Wholesale prices go up and down; at some times of day they may be lower than a retailer feed-in tariff and at other times they may be higher. When wholesale prices go up or down over the longer term, jurisdictions' minimum benchmarks for feed-in tariffs will reflect the change in price. The price for consuming electricity is higher because it is a retail price. The retail price is made up of several components: network costs, the cost of jurisdictional schemes, and retailer costs and margins as well as the wholesale price.

How will retailers be involved? Will I have to switch providers?

We are expecting network businesses and retailers to work together because your energy retailer will need to consider how to incorporate these new pricing structures into the retail bills they offer. This does not necessarily mean you will need to change retailers. The best response for consumers is to keep monitoring your retail energy deal, via comparison websites like the Australian Government's Energy Made Easy website and shop around for a better deal if you find yourself unhappy with the options your retailer is offering you. Remember that distribution network businesses will have to come up with their pricing structure in consultation with their customers under this new system. Then, the Australian Energy Regulator will have to approve it.

How will my energy bill look different as a result of all this?

It's not possible to say as this will depend on too many factors. But it is certainly going to be possible for solar customers to save money on their bill depending on the rewards and incentives on offer. And it would mean that non-solar customers would see the network portion of their energy bills drop as well.

Will buying batteries and using all your solar cause problems for the grid?

If customers choose to buy batteries, they would likely be financially better off if their network rewards them for exporting energy when it is of most value to the power system. Consuming the energy you generate rather than exporting it is also going to be an option for consumers to be rewarded better in how they use the system. Both of these things are good for the grid – they will help us all be smarter about using the poles and wires we have already got and hopefully minimise expensive network upgrades. This will be important as more electric vehicles come into the system. By the mid-2030s electric vehicles are forecast to become the primary driver of increased energy consumption in Australia. We

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are going to need a system where supply and demand is smoothed out across the day rather than high peaks and low troughs of minimum demand.

What did the AEMC consider as part of the rule change requests?

The AEMC is bound by the National Electricity Law and the National Electricity Retail Law which require us to make decisions that serve the long-term interests of consumers in terms of price, quality, safety, reliability and security of electricity supply as well as the reliability, safety and security of the national electricity system. We also have to take consumer protections into account. In seeking stakeholder views on these changes, we weighed up the evidence provided to us with those legal obligations in mind.

What happens next?

Now that we have released our final determination, power businesses in states and territories will develop their plans with consumers before they need to submit them to the Australian Energy Regulator. They might start consulting at different times, depending on when their proposals are due. Obligations on networks will apply sooner but no new pricing plans will apply for existing customers before July 2025.

Find out more

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