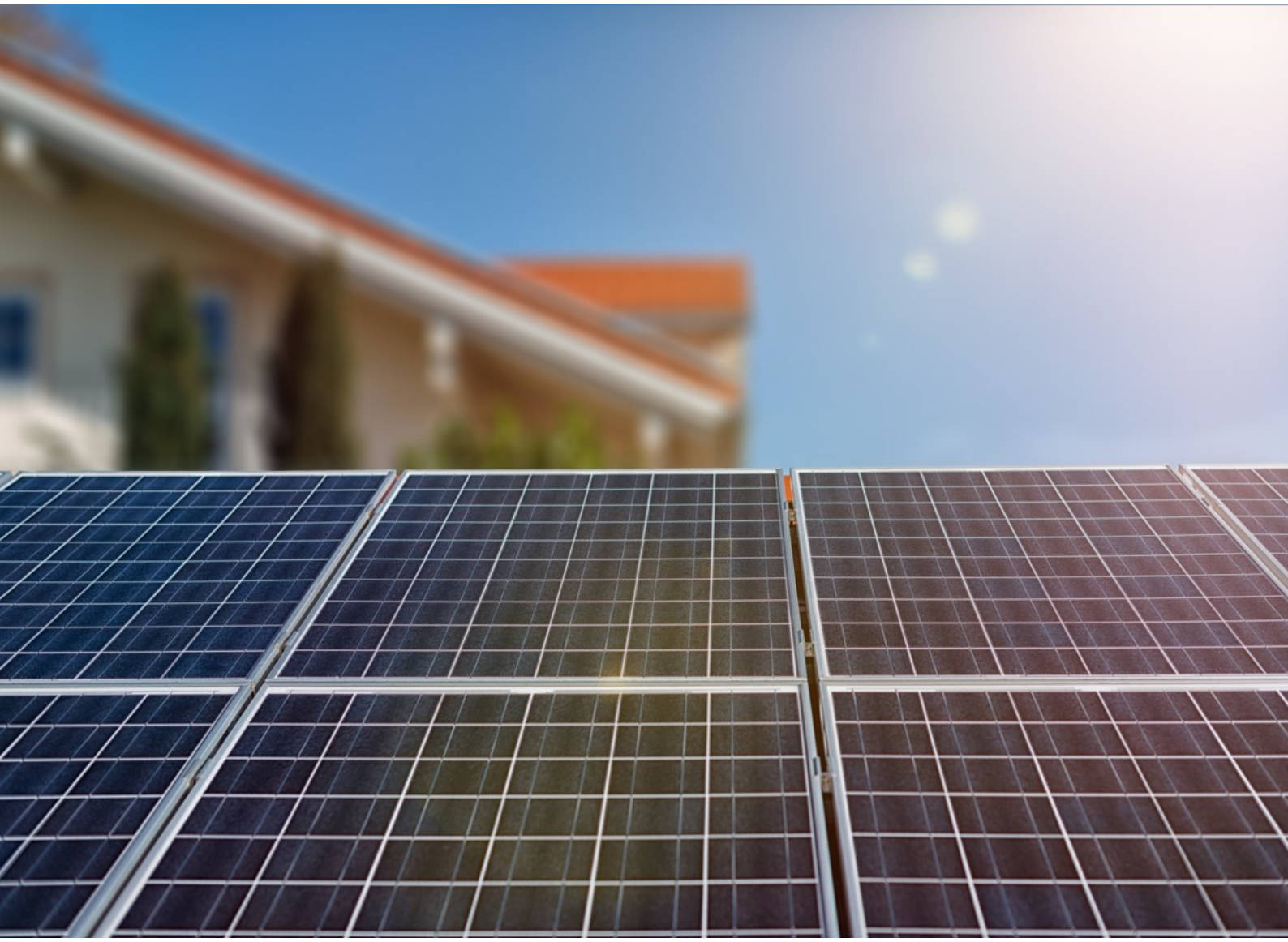
Submissions CLOSE 24 May 2021

IPART
Independent Pricing and Regulatory Tribunal
New South Wales

REVIEW OF
SOLAR FEED-IN TARIFF BENCHMARKS



Draft Report

April 2021

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The Independent Pricing and Regulatory Tribunal (IPART)

We make the people of NSW better off through independent decisions and advice. IPART's independence is underpinned by an Act of Parliament. Further information on IPART can be obtained from IPART's website.

Tribunal Members

The Tribunal members for this review are:

Ms Deborah Cope, Acting Chair
Ms Sandra Gamble
Mr Mike Smart

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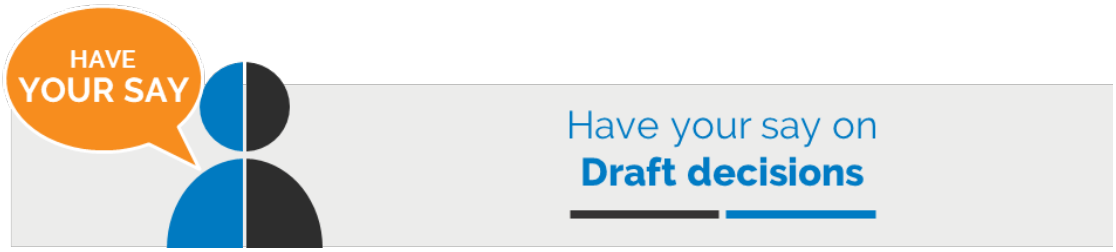


IPART invites written comment on this document and encourages all interested parties to provide submissions addressing the matters discussed.

Submissions are due by 24 May 2021

We would prefer to receive them electronically via our online submission form.

You can also send comments by mail to:

Solar feed-in tariff benchmarks
Independent Pricing and Regulatory Tribunal
PO Box K35
Haymarket Post Shop, Sydney NSW 1240

Late submissions may not be accepted at the discretion of the Tribunal. Our normal practice is to make submissions publicly available on our website as soon as possible after the closing date for submissions. If you wish to view copies of submissions but do not have access to the website, you can make alternative arrangements by telephoning one of the staff members listed above.

We may choose not to publish a submission - for example, if it contains confidential or commercially sensitive information. If your submission contains information that you do not wish to be publicly disclosed, please indicate this clearly at the time of making the submission. However, it could be disclosed under the *Government Information (Public Access) Act 2009* (NSW) or the *Independent Pricing and Regulatory Tribunal Act 1992* (NSW), or where otherwise required by law.

If you would like further information on making a submission, IPART's submission policy is available on our website.

Our draft all-day feed-in tariff benchmark range is 4.4 to 5.9 c/kWh for 2021-22

Solar panels can provide significant savings to customers. A typical solar customer can save $750 per year on their electricity bills by using the electricity they generate, instead of buying this electricity from their retailer. As an added benefit, customers can also earn revenue via a feed-in tariff from any unused electricity they export to the grid - this can be $200 per year for a typical customer.

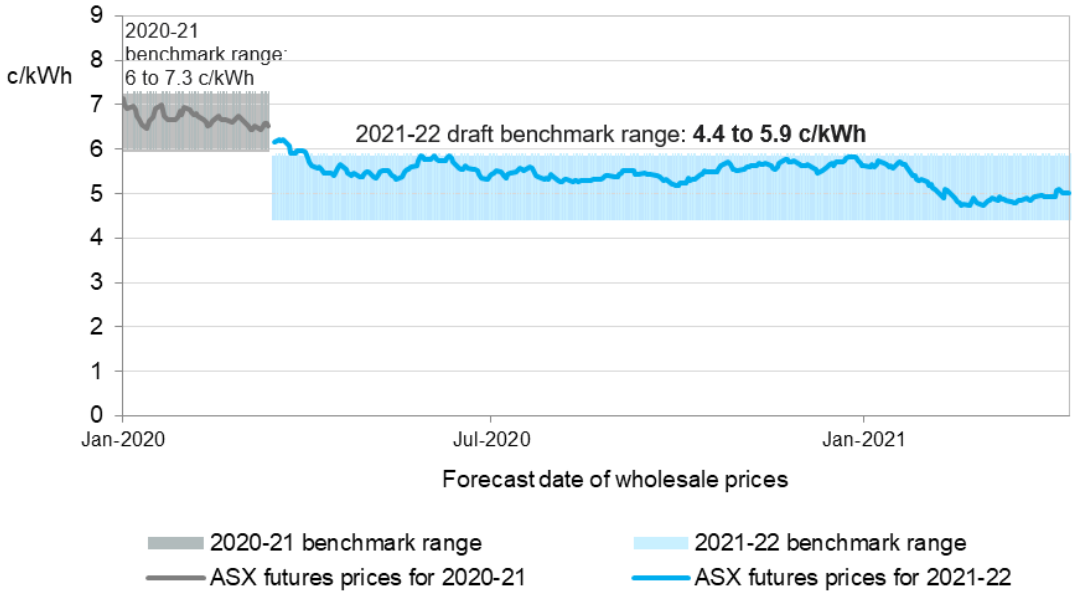
Retailers are not required to pay customers for the electricity they export, but most of them do. If retailers offer feed-in tariffs, they set this tariff themselves.

Since 2012, IPART has been setting benchmarks to guide customers about the feed-in tariffs they could expect to be paid by their retailers for their solar exports. These benchmarks provide information about how much their solar exports are worth to help customers negotiate with their retailer and compare offers.

Our draft decision for the all-day feed-in tariff benchmark range for 2021-22 is 4.4 to 5.9 c/kWh. This is based on the wholesale value of this electricity. We will use the most up to date data when we publish our final benchmarks in June.

Our draft benchmark for 2021-22 is lower than the current all-day benchmark range of 6.0 to 7.3 c/kWh for 2020-21.[i] This is due to lower forecast wholesale electricity prices (Figure 1). These are being driven by lower demand during the middle of the day when most solar exports occur.[ii]

Figure 1 Change in forecast wholesale prices and IPART all-day benchmark ranges



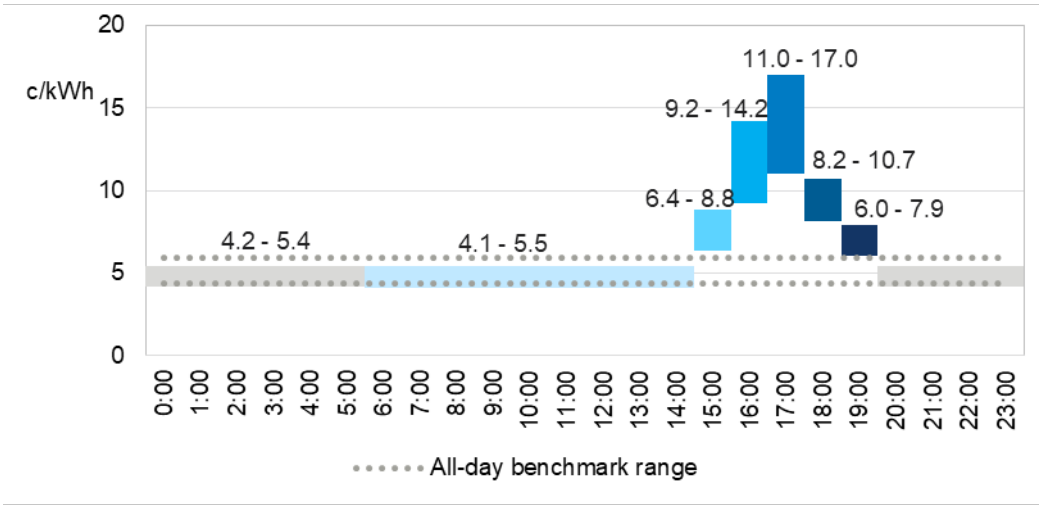
Data source: ASX futures prices.

Lower forecast wholesale prices also mean that retail electricity prices are likely to decrease. This will provide further savings to customers through reduced electricity bills. These lower prices are reflected in the price caps set by the Australian Energy Regulator (AER), which will fall by 2.7 to 7% in NSW from July 2021.[1] Most customers are on market offers that are lower than these caps – these customers should negotiate lower prices with their retailer.[iii]

As more customers export their excess electricity and increase the supply of solar generated electricity available, electricity prices are likely to continue to fall during the day. This means that the value of solar exports is likely to remain low in the longer term. However, customers will continue to make significant savings on their bills by using the electricity they generate – the key benefit of having solar panels.

Customers with batteries may also be offered higher feed-in tariffs if they are able to export their excess solar during the evenings. Prices are likely to remain significantly higher at these times of the day. To guide customers about the value of their exports at different times of the day, we have set time-dependent tariffs. Figure 2 shows that between 5 pm and 6 pm, exports could be worth up to 17 c/kWh in 2021-22, which is significantly higher than IPART's all-day benchmark. However, currently only 2% of exports occur after 5 pm.[2]

Figure 2 Draft time-dependent feed-in tariffs (c/kWh)



Data source: IPART calculations.

1 The AER sets Default market offer (DMO) prices that cap the price retailers can charge consumers on a standing offer contract. AER, Final Determination, Default Market Offer Prices 2021-22, April 2021 p 21.

2 The price of buying electricity from a retailer is higher than feed-in tariffs, which means that customers with batteries are still better off using the electricity that they generate rather than exporting it to the grid. The retail price of electricity is higher than the value of exports because retail prices include other costs, including the costs of using the network, environment costs, and retail costs.

To make our decisions on the solar feed-in tariff benchmarks, we made incremental improvements to our previous approach. These have been made based on both our own analysis and in response to stakeholder submissions. We intend to use our updated methodology to update our benchmarks in 2022 and 2023.

This Draft Report outlines our draft decisions on our feed-in tariff benchmarks, and discusses issues that customers frequently face when dealing with solar energy. We have also released:

- a technical paper that discusses our draft decisions in setting the benchmark tariffs in more detail
- an information paper on the longer term value of solar exports.

Draft Decisions

1 The all-day solar feed-in tariff benchmark range is 4.4 to 5.9 c/kWh for 2021-22.

2 The time-dependent feed-in tariff benchmark ranges for 2021-22 are set out in Figure 2.

3 We will include a longer historical average of ASX energy futures for our forecast wholesale electricity costs, in addition to the short term (40-day) average.

4 To calculate the solar multiplier, we will calculate the average solar weighted and time weighted prices directly from three years of historical data. Previously, we used this historical data to generate a Monte Carlo simulation and used the median from the distribution of modelled scenarios.

5 We will use solar export data from all 3 distribution network service providers (Ausgrid, Endeavour Energy and Essential Energy) to calculate a solar multiplier for each network. We will reflect the variations in the solar multipliers within our state-wide benchmark ranges.

Introduction

The NSW Government is committed to taking decisive and responsible action on climate change. In March 2020, the NSW Government released its Net Zero Plan Stage 1: 2020-2030 to set out how it will reduce emissions over the next decade so that net emissions fall to zero by 2050.

The plan will support a range of initiatives targeting electricity and energy efficiency, electric vehicles, hydrogen, primary industries, coal innovation, organic waste and carbon financing. Businesses will be supported to modernise their plant and increase productivity, while farmers will have access to new markets and technologies. The plan will also help to drive down the cost of living and provide consumers with more information to help them make more environmentally and financially sustainable choices.

As a low-emissions technology, solar panels reduce the need for electricity to be generated from sources that contribute to climate change. IPART's solar feed-in tariff benchmark is one tool that informs solar consumers to help them compare retail offers to improve the financial returns on their panels.

Around half a million residential household and small businesses have installed solar panel systems in NSW.[iv] This represents around 15% of residential households and 3% of small businesses in NSW.[v] Energy from small-scale solar panels makes up around 5% of total electricity generated in NSW.[vi] In addition, the number of households with battery systems is slowly increasing, so that solar electricity can be used or exported to the grid even when solar panels are not generating electricity.

What we have been asked to do

Set annual benchmark ranges for an all-day feed-in tariff, and feed-in tariffs for different times across the day

We have been providing advice to the NSW Government on the value of solar electricity since 2012. In November 2020, the NSW Government provided IPART with a Terms of Reference for us to continue this role for the next 3 years.

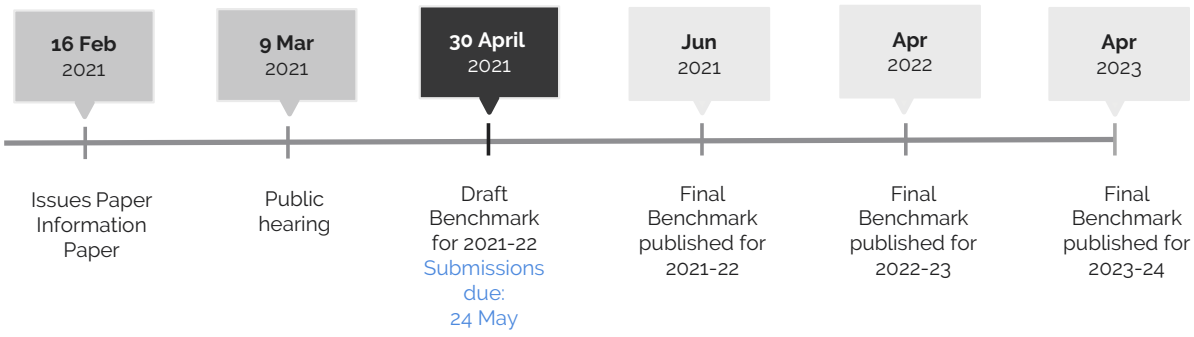
Our Terms of Reference requires us to set annual benchmark ranges for an all-day feed-in tariff, and feed-in tariffs for different times across the day. In doing so, we are required to consider the following key parameters:

- there should be no resulting increase in retail electricity prices
- the voluntary benchmark range should operate in a way to support a competitive retail electricity market in NSW.

We have also been asked to report on the feed-in tariffs currently being offered by each retailer, and to note whether they are within the benchmark range.

In February 2021, we released an Issues Paper and Information Paper for our review and invited stakeholder submissions. In March 2021, we held a public hearing to discuss with stakeholders issues that consumers experience when dealing with solar energy, and their views on our approach in calculating our feed-in tariff benchmarks.

We invite stakeholder submissions to our Draft Report by 24 May 2021. Details on how submissions can be made are at the beginning of this report. We will consider all submissions and undertake our own analysis before providing the Minister for Energy and Environment (the Minister) with our final report by 30 June 2021.[3]



3 Our Terms of Reference requires us to publish solar feed-in tariff benchmarks by April each year. However, we have received a letter from the Coordinator-General of the Department of Planning, Industry and Environment confirming that the benchmark for 2021-22 will be published by IPART in June 2021.

Solar feed-in tariff benchmarks for 2021-22

Our approach is to set our benchmark tariffs based on the value of solar exports to retailers, because they avoid the costs of purchasing this electricity from the National Electricity Market (NEM). When solar exports occur, retailers avoid the wholesale costs of electricity, transmission and distribution losses, and NEM fees and charges.

4.4-5.9c/kWh

2021-22 draft all-day feed-in tariff benchmark range

For our draft decision, we have made incremental improvements to our previous approach. This should mean that our benchmark tariffs are a more helpful guide to customers about the feed-in tariffs they could expect to receive from retailers for their solar exports. The changes we have made are:

- including a longer historical average of forecast wholesale prices within our benchmark range, to reflect retailers' actual practices in purchasing wholesale electricity – previously we only reflected the latest market information on the forecast value of wholesale electricity
- simplifying how we calculate our solar multiplier (the value of solar exports relative to the wholesale price when exports occur) to improve the transparency and replicability of our approach
- calculating solar multipliers for all 3 distribution network areas – previously we only had data from Ausgrid.

We provide further details of our updated methodology in our technical paper accompanying this report.

Table 1 Components for the draft all-day solar feed-in tariff benchmark range 2021-22

Benchmark component	Value
Forecast wholesale electricity price range	4.6 to 6.1 c/kWh
ASX futures baseload contracts for the 12-month period 2021-22 using the 40-day average price (including 5% adjustment to remove contract premium)	*4.6 c/kWh*
ASX futures baseload contracts for the 12-month period 2021-22 using a volume-weighted average of all historical trades	*6.1 c/kWh*
Solar multiplier range	0.88 to 0.91
Ausgrid	*0.90*
Endeavour Energy	*0.88*
Essential Energy	*0.91*
Network loss factor	1.06
NEM fees and ancillary charges	0.09 c/kWh
Solar feed-in tariff benchmark range	**4.4 to 5.9 c/kWh**

Note: Prices taken at 12 April 2021. For our longer term historical average, the trades available were up to 21 months.

We have set time-dependent feed-in tariff benchmarks

Retailers could offer different feed-in tariffs across the day as an alternative to an all-day rate. However, currently retailers are choosing to offer their customers a single feed-in tariff that applies at all times.[4]

Under our Terms of Reference, we are required to set time-dependent feed-in tariff benchmarks. We have set prices for different times based on how much price variation occurs throughout the day. Very little price variation occurs in the earlier part of the day between 6 am and 3 pm. Therefore, we have set one price for this time. On the other hand, prices vary a lot between 3 pm and 8 pm so we have set hourly benchmarks for these times. This is consistent with our previous approach.

Our draft decision is to also include a price for between 8 pm to 6 am so that we have a time-dependent benchmark tariff available for all times of the day. This is to support solar exports from batteries that can occur at any time.[vii]

Table 2 provides our draft time-dependent feed-in tariff benchmarks.

Table 2 Draft benchmark ranges for time-dependent feed-in tariffs

Time window	(c/kWh)	% of solar exports (2019-20)
6 am to 3 pm	4.1 to 5.5	83.89
3 to 4 pm	6.4 to 8.8	9.11
4 to 5 pm	9.2 to 14.2	4.89
5 to 6 pm	11.0 to 17.0	1.70
6 to 7 pm	8.2 to 10.7	0.32
7 to 8 pm	6.0 to 7.9	0.03
8 pm to 6 am	4.2 to 5.4	0.05

Note: The multipliers used for the 6 pm to 7 pm, 7 pm to 8 pm and 8 pm to 6 am time windows are not solar-weighted. These times cover less than 1% of solar exports. We previously did not set a benchmark between 8 pm to 6 am because exports are immaterial and wholesale prices are relatively low at those times (IPART, Solar feed-in tariffs 2018-19, June 2018, p 8).
Source: IPART analysis based on financial year 2020 export data provided by Endeavour Energy, Essential Energy and Ausgrid, February 2021.

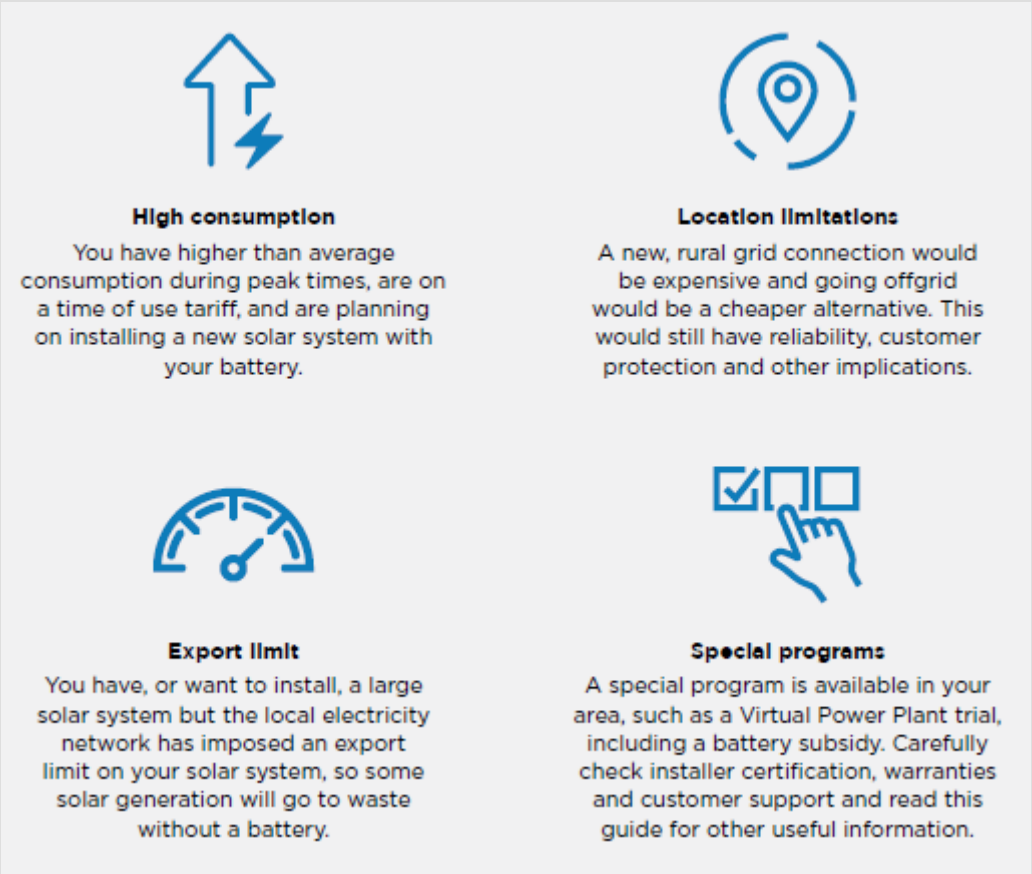
Time-dependent tariffs would provide customers with more options to manage their solar generated electricity, particularly those who are able to shift their usage and/or have batteries. For example, between 5 pm and 6 pm, solar exports could be worth up to 17 c/kWh in 2021-22, which is significantly higher than IPART's all-day benchmark. However, this is still less than the retail price of electricity. This means that customers would still be better off if they used their solar electricity during this time, rather than buying it from their retailer and exporting their solar electricity to the grid.[5]

4 There are exceptions such as Amber Electric that is offering a real-time feed-in tariff that varies every 30 minutes in line with changes in the wholesale spot price of electricity.

5 The retail price of electricity is higher than the value of exports because retail prices include other costs, including the costs of using the network, environment costs, and retail costs.

The NSW Government released a guide in 2020 for consumers to help customers decide whether buying a battery is right for them, and whether it can save them money. It shows that in 2020, batteries may already make financial sense for some households (Box 1). That is, the battery will pay for itself within the warranty period (typically 10 years) and will save money compared to purchasing electricity from a retailer over the same period.[viii]

Box 1 Circumstances where batteries may already make financial sense (as at 2020)



This list might expand within a few years to include most grid-connected households that export solar power to the grid. However, the optimum battery size for most of these households is likely to be relatively small.

Note: Individual circumstances may vary so customers should seek the advice of a qualified professional.
Source: NSW Government, NSW Home Solar Battery Guide, 2020, p 44.

As payback periods fall with the reduction in battery costs and uptake increases, there may be more customers interested in tariffs that vary across the day.

For our Final Report, we will analyse the overall financial impact that time-dependent tariffs could have for a range of different customers with varying electricity usage profiles, solar panel systems and battery sizes.

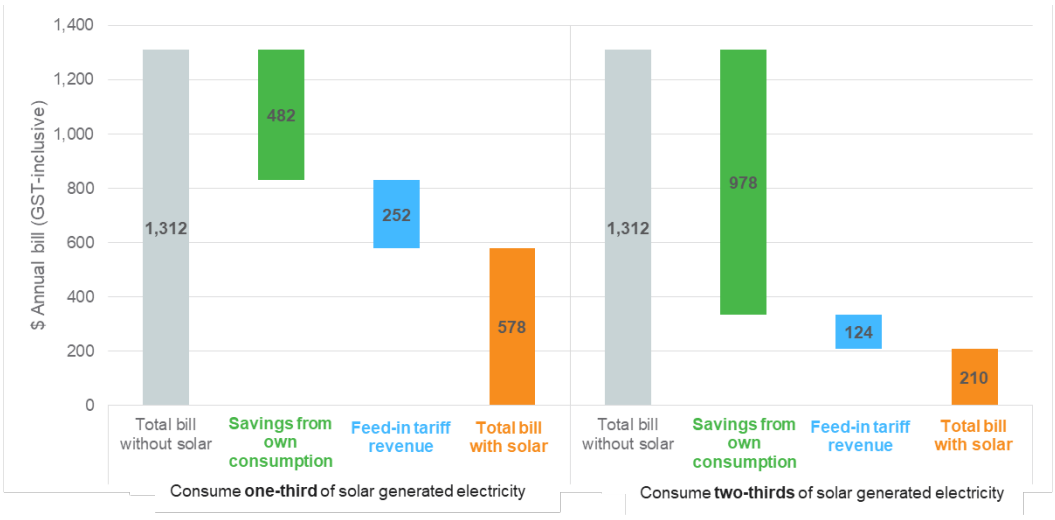
The greatest benefit of solar panels are savings from using the electricity generated

When customers use their solar generated electricity rather than buying electricity from their retailer, they can make significant savings on their energy bill. This is the key benefit of solar panels to customers. By using the electricity they generate, customers do not have to pay for all the additional costs that retailers incur when supplying retail electricity (for example, network costs, overheads and funding for green energy programs). These savings amount to around $750 a year for a typical customer, or more than half of a typical bill.

The feed-in tariff revenue is a secondary benefit. When customers do not use all the electricity generated by their panels, the excess amounts are exported to the grid and customers may be paid a feed-in tariff for these solar exports. Based on the midpoint of our draft feed-in tariff benchmark a typical customer would earn around $190 a year from feed-in tariffs.[6, 7]

Figure 3 shows that the benefits of solar panels are greater as more solar generated electricity is consumed at home. A customer that consumes two-thirds of their solar generated electricity could save a further $368 off their total annual bill compared to a customer that only consumes one-third of their solar generated electricity.

Figure 3 Solar panels provide greater benefits as more solar electricity is consumed at home



Note: In this example, we used a feed-in tariff of 5.2 c/kWh based on the midpoint of IPART's draft decision feed-in tariff range of 4.4-5.9 c/kWh, a solar system size of 5 kW, daily supply charge of 80 c/day and variable charge of 20 c/kWh. Our assumed feed-in tariff revenue is GST exclusive.

Data source: IPART analysis.

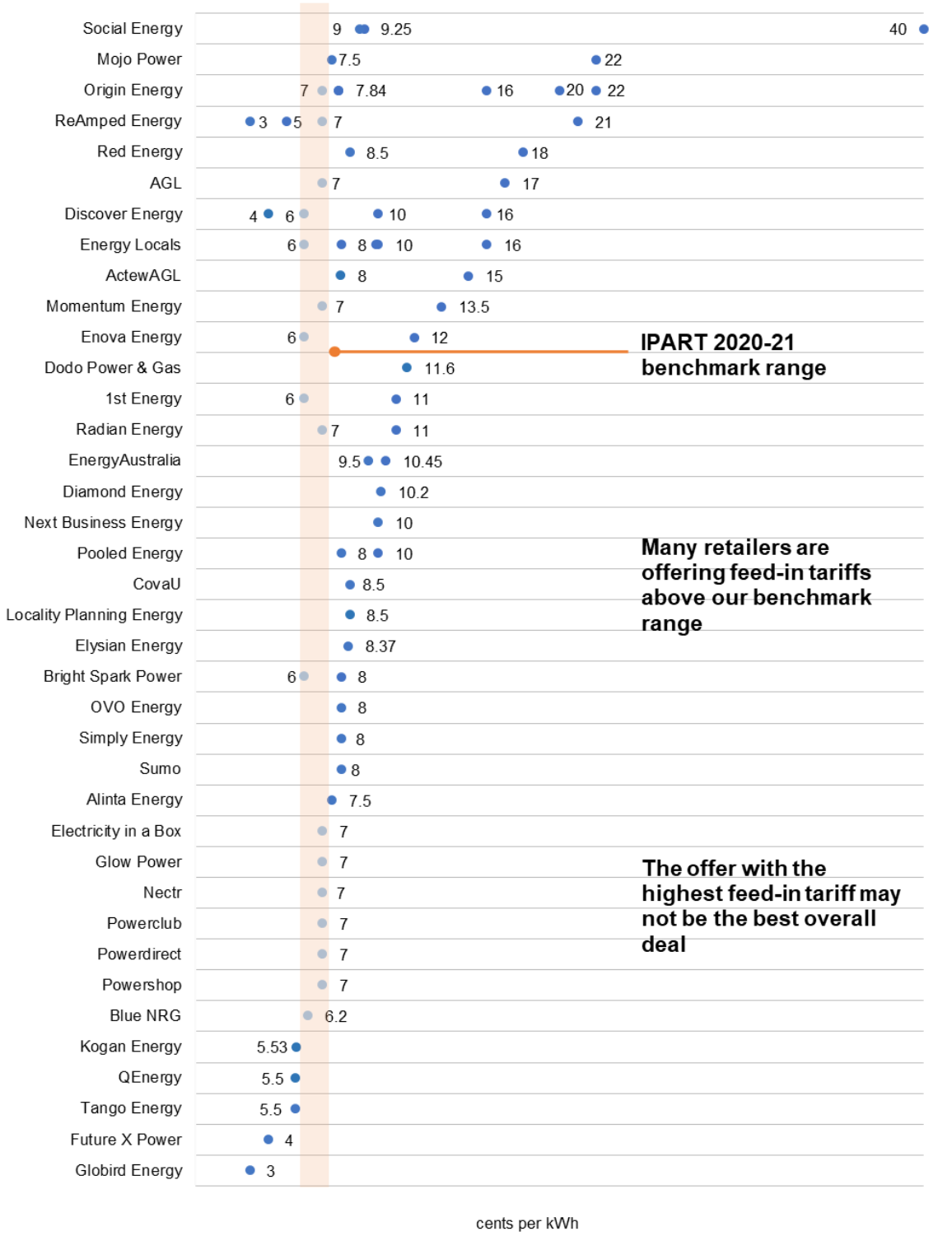
6 Based on a consumer with a 5 kW solar panel system and assuming that 50% of the electricity generated is consumed (avoiding buying 3,650 kWh from the retailer at 20 c/kWh) and the remainder is exported. We have also assumed that a 5 kW solar panel system produces an average 20 kWh of electricity per day (Clean Energy Council, Guide to installing solar PV for businesses in NSW, p 6).

7 In our 2020-21 solar feed-in tariff benchmark report, we stated that the average bill for a typical solar customer would be lower by $455 based on a 3 kW solar system.

To maximise the benefit of solar panels, customers could consider shifting some of their electricity usage to when their solar panels are generating the most electricity. This is typically during the middle of the day. For example, customers may be able to turn on or use a timer, to use their appliances (e.g. dishwasher or washing machine) at midday rather than at other times.

Figure 4 shows the different feed-in tariffs currently offered by retailers. New types of retail packages supported by new technologies could also be developed to help optimise the times that households use, store, or export electricity, to benefit these households and also other consumers around them.

Figure 4 Solar feed-in tariffs available in NSW – April 2021



Note: Actew AGL does not supply in the Ausgrid network and Pooled Energy does not supply in the Essential Energy network. Some tariff offers include declining block tariffs where premium feed-in tariffs are only paid to a limited quantity of exports each period. Other offers may only pay premium feed-in tariffs during a time-limited (or quantity-limited) benefit period after which retailers will pay lower feed-in tariffs.

Data source: Energy Made Easy and IPART analysis.

Empowering consumers to make informed choices about solar energy

Stakeholders submitted that there is a lot of information available to consumers about solar energy and the different feed-in tariffs that retailers offer.[ix] For example:

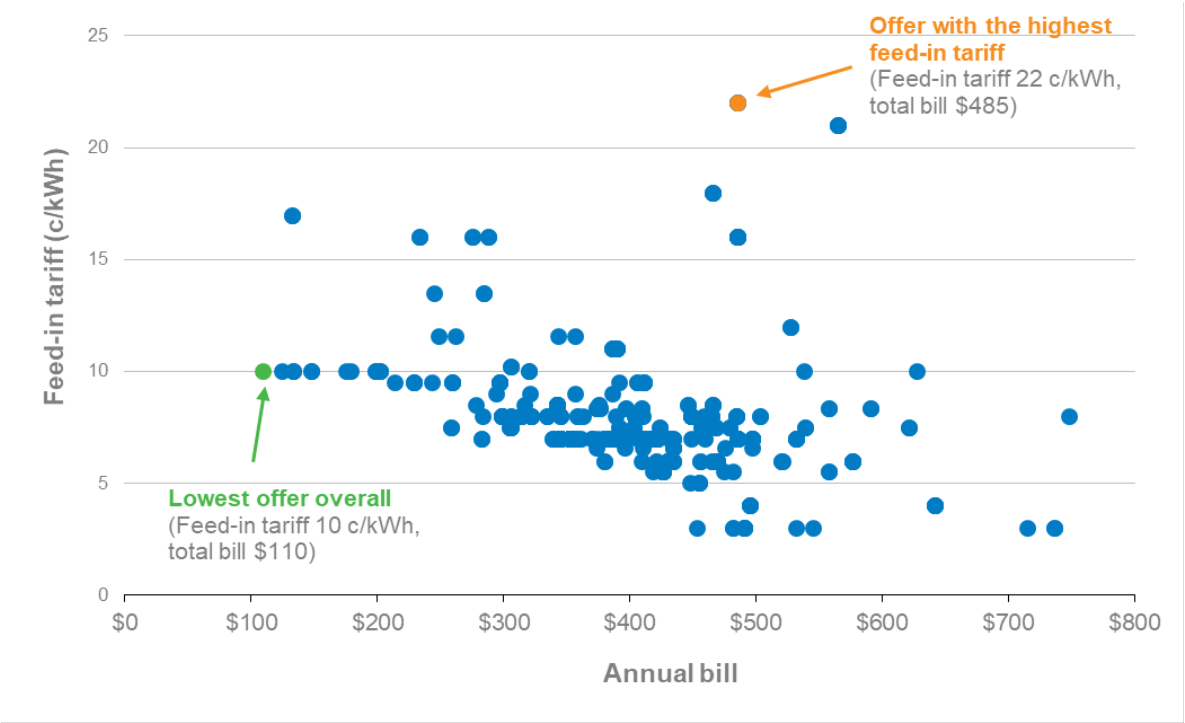
- Energy made easy – provides information on retailers' offers, including feed-in tariffs
- Clean Energy Council – provides information about solar systems and battery installation[8]
- SunSpot - which is a free service provided by the Australian PV Institute shows the savings that could be achieved from solar systems and batteries.

However, stakeholders also submitted that it is difficult for customers to combine the information that is available to decide which offer of feed-in tariff, retail charge and daily supply charge represented the best value for money given their circumstances.[x] PIAC noted that households may actually be worse off, despite receiving a reasonable feed-in tariff, as they may receive higher than normal fixed or usage rates for consumption.[xi]

Our analysis of the offers that are currently available confirm that offers that include a high feed-in tariff are not necessarily the best overall deal for customers. Figure 5 shows that there is not a strong correlation between customers' total bills and the feed-in tariffs offered. For many offers, a customer is better off overall with a lower feed-in tariff because the retail tariffs offered are also lower.

8 The NSW Government website, Energy Saver, also has a NSW Home Solar Battery Guide. It helps households interested in buying a battery system and covers: understanding your energy use, how a home power station works, planning for a battery (technologies and sizing), whether a battery will save a household money, what to look out for when buying a battery and frequently asked questions.

Figure 5 Annual bills and feed-in tariffs - April 2021



Note: In this example, we used a solar system size of 5 kW, consumption of 5,100 kWh per year, assumed that 50% of solar generated electricity is exported, and that the customer is in Ausgrid's network area.

Source: IPART analysis.

Other stakeholders such as Red Energy and Lumo Energy noted that the energy industry is actively engaged to include energy data in the Consumer Data Right.[xii] Red Energy and Lumo Energy submitted that this would allow customers to provide energy retailers consent to share their data with an accredited service provider such as a comparison site to get more tailored, competitive services.

Energy Australia also submitted that IPART should provide information for options in the market for consumers to manage their own energy use and costs, including for combinations of solar PV and batteries.[xiii] It submitted that this information should be readily available from independent sources.

We support the development of the Consumer Data Right for the energy sector. The ability to securely share energy data with accredited parties (such as a comparison site) and then quickly use this information, can help consumers make better financial decisions. It could also promote competition between energy service providers, leading to better prices and innovation in product and service offerings.[9]

9 The ACCC released a consultation paper on its preliminary positions on the energy rules framework and stakeholder submissions closed in August 2020. We will continue to monitor developments in this area.

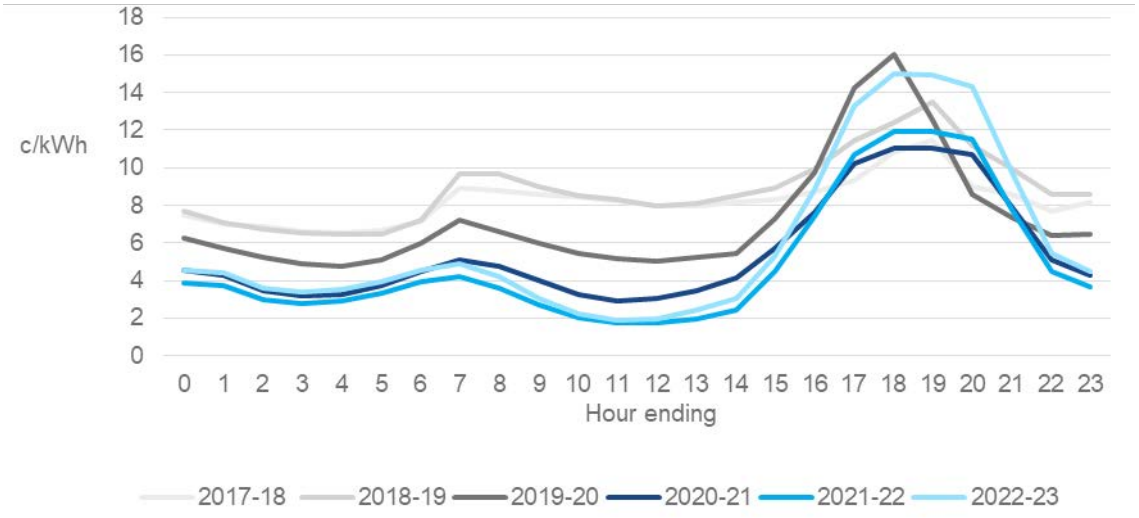
Longer term value of feed-in tariffs

IPART sets solar feed-in tariff benchmarks each year. Several of the stakeholders who responded to our Issues Paper consider that IPART's benchmark should be for a longer period, as solar panels are a long term investment.[xiv] This would allow people to better assess the financial value of their solar panels.

We set a benchmark range each year because the price of electricity can fluctuate significantly from year to year, and can be difficult to predict several years in advance. As a result, most retailers change their retail prices (including their solar feed-in tariffs) at least once a year, rather than locking them in over the longer term. This means that IPART needs to provide an up-to-date guide of what solar exports are worth.

However, there are some clear trends emerging that mean that solar feed-in tariffs are likely to stay relatively low over the medium term. Solar exports are likely to be worth half of what they were over the last few years. This is because wholesale prices in the middle of the day – when solar is exporting to the grid – are likely to be much lower, as solar electricity continues to grow. Figure 6 shows forecasts from the Australian Energy Market Commission (AEMC) that prices in the middle of the day are expected to fall to around 2 c/kWh in the next few years, down from around 8 c/kWh in 2018-19.

Figure 6 Wholesale price by time of day



Source: IPART calculations, based to data from AEMO, AEMC, Residential Electricity Price Trends 2020 Final Report, 21 December 2020, p 11.

As shown in the previous section, solar panels are still likely to remain a good investment for many electricity customers. Customers can significantly reduce the amount of electricity they need to buy from their retailer by generating it themselves. However, they should put less weight on the revenue from exporting excess electricity to the grid when they are not using it.

Our benchmarks reflect the value of solar exports to retailers

Stakeholders submitted that our benchmarks should be higher to reflect:

- the value of solar energy in displacing high-cost generation[xv]
- avoided network costs as less of the power system is used if solar exports are used by customers nearby[xvi]
- the environmental benefits that solar generated electricity provides compared to other forms of generation.[xvii]

A number of stakeholders also considered that feed-in tariffs offered by retailers should at least be equal to retail electricity prices.[xviii]

Retailers are not required to offer feed-in tariffs, and if they do, they are free to set their own tariffs. They are also not required to follow our feed-in tariff benchmarks. This means that if IPART sets a higher benchmark, it would not mean that retailers would have to pay customers more for their solar energy, because offering a feed-in tariff is voluntary.

For our benchmarks to be useful to customers, it should reflect what retailers are actually likely to pay their customers, based on how much the solar electricity is worth to them. This means that we have not included 'external benefits' – benefits to the wider community, such as avoided health and environmental costs in our benchmark.

But if IPART did set a higher benchmark, and all retailers paid a higher feed-in tariff, this would result in higher costs to retailers, which would mean that they would have to increase their prices. For example, if all retailers paid a feed-in tariff of 15 c/kWh (around three times the 2021-22 benchmark), the average annual household bill would need to increase by around $30 (to recover additional costs of $100 million each year).

Households without solar panels should not have to pay more to reduce the bills of customers with solar panels. This would disadvantage the households who are unable to install a solar system themselves (for example, because they rent or they cannot afford the upfront costs).

We discuss below each of the issues raised by stakeholders.

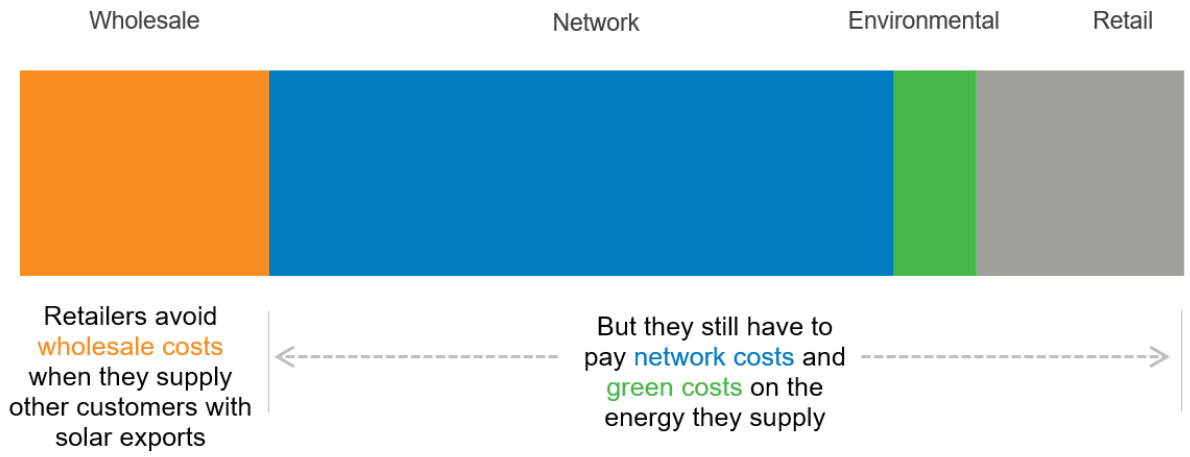
Our feed-in tariff benchmarks are lower than retail electricity prices

A number of stakeholders submitted that they considered the feed-in tariff offered by their retailer to be too low compared to the retail price of electricity. They considered that the feed-in tariff should be higher, and some submitted that it should be at least equal to the retail price. This has also been the main issue raised by stakeholders in past reviews.

Our feed-in tariff benchmarks (4.4 to 5.9 c/kWh) are substantially lower than retail electricity prices (around 20 to 30 c/kWh). Our benchmark represents the savings to retailers as a result of not buying the equivalent electricity from the wholesale market. This represents a fair price that retailers should be willing to pay for solar exports.

Once retailers purchase solar electricity from consumers, there are additional costs that retailers incur when delivering this electricity to other customers. For example, network costs, retailers operating overheads, funding for green energy programs and GST[10] – see Figure 7 below.

Figure 7 Retail electricity cost components



The feed-in tariff reflects the market price of wholesale electricity

Stakeholders submitted that solar energy displaces high-cost generation (including the need to build alternative generating capacity) and reduces the chances of high wholesale electricity prices occurring in the first place.

However, we consider that solar customers should be treated consistently with other electricity generators and so should not get a higher or lower tariff to reflect their impact on wholesale prices. For example, a new wind turbine that contributes to reduced wholesale spot prices does not receive any additional payment to reflect the lower wholesale price. It takes the same market price as all other generators. This also means that all consumers benefit from lower prices.

10 Most residential customers are not registered for GST and so they do not need to pay GST on their solar feed-in tariff revenue. Our feed-in tariff benchmarks are exclusive of GST. However, when retailers supply solar exports to other customers, the supply of those exports are subject to GST. Solar customers that are registered for GST must pay GST on their feed-in tariffs. Australian Tax Office, Are there any GST implications for owners of grid-connected solar power generation equipment in respect of electricity supplied via the network?, accessed 12 April 2021.

Retailers have to pay network costs on solar exports

Stakeholders submitted that avoided network costs should be included in our benchmarks as less of the network is used if exported solar energy is used by other consumers nearby.

We don't make an allowance for this, because retailers still incur the full network costs when they sell solar exports to other consumers and so do not avoid these network costs.

In addition, large volumes of solar exports may have the potential to impose higher network costs due to additional investment required to support the bidirectional flows of electricity to handle the volume of solar exports. As a result of these costs, the AEMC has recently made a draft determination to allow distribution network service providers to levy export charges. Under their draft determination, networks could also pay customers more for exporting solar electricity where it reduces their costs.

If the rule changes are approved, customers will not see any impacts until 2024. Distribution network service providers would need to consult extensively with their customers and have their pricing structures approved by the AER before levying any export charges.[xix] We will consider the impact of any network charges on our benchmarks in our next review of our methodology in 2024, once specific information becomes available. More information on the AEMC's draft determination is provided in the next section.

Solar customers receive upfront subsidies to reflect avoided carbon emissions

Stakeholders submitted that our benchmark should include the environmental benefits that solar generated electricity provides compared to other forms of generation. As explained previously, for our benchmarks to be useful to customers, it should reflect what retailers are actually likely to pay their customers, based on how much the solar electricity is worth to them. Retailers do not capture avoided externalities from supplying solar generated electricity. This means that if we included a value for environmental benefits in the feed-in tariffs that was paid by retailers, retailers would need to recoup this amount from their customers (including those without solar panels) through higher retail prices.

We note that solar customers currently receive an upfront subsidy for installing their panels under the Small Scale Renewable Energy Scheme (SRES) to reflect the avoided costs of carbon emissions. For a 5 kW solar system installed in Sydney, the subsidy is currently worth around $2,600.[11]

All electricity customers pay an average of around $41 per year to subsidise customers with solar panels. Customers also pay another $55 per year (for an average bill) for other 'green costs' (including subsidies for the Renewable Energy Target, the Climate Change Fund, and the Energy Saving Scheme).[xx]

11 IPART calculation based on: Australian Government Clean Energy Regulator Rec Registry, Small generation unit STC calculator, accessed 9 February 2020; and Ecosave, Spot Trade Market Update, accessed 9 February 2020.

Potential changes in the market design of solar exports

The traditional model of electricity supply is changing. Smaller generators, such as solar panels, have increased rapidly over the network (known as distributed energy resources or 'DER'). Many consumers have installed solar panels and so now both import and export their electricity. However, the design and rules for the electricity market were established when electricity flowed in one direction, from a small number of large thermal generators to consumers.

Regulators and various market bodies are working to ensure that the NEM can continue to meet the needs of consumers as technology evolves.

Recently, the AEMC released a draft reform package to integrate distributed energy resources, such as small-scale solar and batteries, more efficiently into the electricity grid.

AEMC's draft ruling to allow distributed network service providers to charge for export services

On 25 March 2021, the AEMC released its draft reform package comprising the following key changes:

- **Updating the regulatory framework to clarify that distribution services are two-way and include export services**. The current rules relating to distribution services will apply to export services and officially recognise energy exports as a service to customers.
- **Promoting incentives to efficiently invest in, operate and use export services.** This is to give networks stronger incentives to deliver quality export services. Currently there are no financial penalties (or rewards) for poor (or good) network export service.
- **Enabling distribution networks to develop new tariff options, including two-way pricing for export services.** Networks may reward (or charge) customers for exports when demand is high (or low). Options could include allowing free exports up to a limit, paying extra for guaranteeing export at peak times, providing export rebates (negative pricing option), grandfathering of existing arrangements, or no export charges.
- **Allowing flexible pricing solutions at the network level.** Each network will be able to devise its own pricing structure as different networks have different capabilities and customer preferences. Each plan must be approved by the AER.[xxi]

The AEMC modelled the potential impact on customer bills if networks introduced export charges. Most retail customers could receive a small bill reduction. This reflects that customers who have not had the opportunity to invest in solar panels, would no longer be asked to pay an equal share of the costs for distribution networks to maintain or improve export services. Customers with battery storage could see more benefits. They could gain especially through export rebates (negative prices).

The AEMC is aware that some stakeholders, particularly rooftop solar owners, are opposed to the potential changes. However, its view is that rooftop solar owners are already paying a financial penalty from being constrained off the network at times and that this problem will become worse. It considers that all users can benefit by sharing the cost of upgrading distribution networks to enable more efficient two-way flows of energy (regardless of whether they have solar or not).

The rule changes, if approved, do not mandate export charges. Implementation by the networks are optional. It is expected that the networks would develop their pricing plans and options, and transition plan if introducing any charges. Networks would be required to consult with its customers and their plans must be approved by the AER. We will consider the impact of any network charges on our benchmarks in our next review of our methodology in 2024, once specific information becomes available.

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[i] IPART, Solar feed-in tariff benchmark, 2021-22, April 2020, p 2.
[ii] AEMC, Final Report Residential Electricity Price Trends 2020, December 2020, p 9.
[iii] AER, Final Determination, Default Market Offer Prices 2021-22, April 2021, p 15.
[iv] Based on data provided by Endeavour Energy, Essential Energy and Ausgrid on small customer numbers as at 30 June 2020.
[v] Estimated from data provided by Endeavour Energy, Essential Energy and Ausgrid; NSW Department of Planning, NSW 2019 Population Projections; Small Business Commissioner, The NSW small business landscape at a glance, last accessed 8 February 2021.
[vi] Data from Australian Energy Council, 5 February 2021; Clean Energy Council, Clean Energy Generation in 2019.
[vii] Both AGL and Climate Change Balmain-Rozelle submitted that we should have a time-dependent feed-in tariff benchmark available at all times of the day to support solar exports from batteries. AGL submission to IPART Issues Paper, March 2021, p 2; Climate Change Balmain-Rozelle submission to IPART Issues Paper, March 2021, p 4.
[viii] NSW Government, NSW Home Solar Battery Guide, 2020, p 8, 44, 70.
[ix] Australian Energy Council submission to IPART Issues Paper, March 2021, p 1; Climate Change Balmain-Rozelle submission to IPART Issues Paper, March 2021, p 1.
[x] Climate Change Balmain-Rozelle submission to IPART Issues Paper, March 2021, p 1.
[xi] PIAC submission to IPART Issues Paper, March 2021, p 2.
[xii] Red Energy and Lumo Energy submission to IPART Issues Paper, March 2021, p 2.
[xiii] Energy Australia submission to IPART Issues Paper, March 2021, p 2.
[xiv] PIAC submission to IPART Issues Paper, March 2021, pp 1-2; Energy Australia submission to IPART Issues Paper, March 2021, p 3.
[xv] G.Harris submission to IPART Issues Paper, March 2021.
[xvi] Anonymous submission to IPART Issues Paper, March 2021.
[xvii] D.Curtis submission to IPART Issues Paper, March 2021.
[xviii] Anonymous submission to IPART Issues Paper, March 2021; E.Ellis submission to IPART Issues Paper, March 2021; D.Curtis submission to IPART Issues Paper, March 2021.
[xix] AEMC, Consumer FAQs: How the AEMC proposes making room on the grid for more solar and new-tech energy, March 2021, p 2, accessed 28 April 2021.
[xx] AEMC, Residential electricity price trends report - End-year 2020, 21 December 2020, p 16.
[xxi] AEMC, Integration of distributed energy resources, March 2021, accessed 8 April 2021; AEMC, Have your say: Making room for more solar and new tech energy – infographic, March 2021, accessed 8 April 2021.