Queensland Competition Authority

Determination

Solar feed-in tariff for regional Queensland in 2022–23

May 2022

Level 27, 145 Ann Street, Brisbane Q 4000
GPO Box 2257, Brisbane Q 4001
Tel (07) 3222 0555
www.qca.org.au

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SUMMARY

The Queensland Competition Authority (QCA) has been directed to determine the 2022–23 solar feed-in tariff for regional Queensland.

We have used the 'avoided cost' methodology to calculate the feed-in tariff, which aims to ensure customers with solar photovoltaic (PV) systems receive a fair and reasonable return for the electricity they export to the electricity grid. We have used the same methodology since 2014–15.

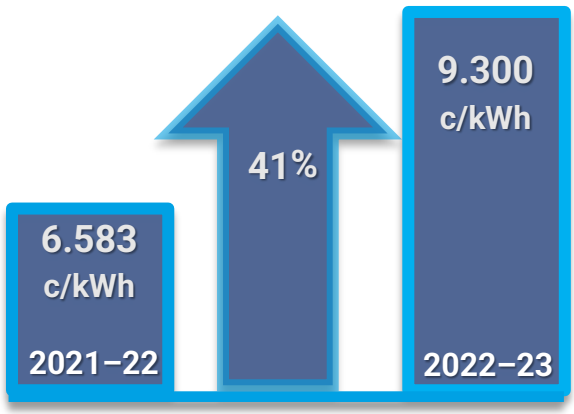
When a retailer sources electricity from solar PV customers rather than the National Electricity Market (NEM), it avoids some costs. These avoided costs are wholesale energy costs, NEM management fees, ancillary services fees and the value of transmission and distribution losses (energy losses).

However, retailers still incur other costs associated with providing retail electricity services to their customers, including retail operating costs and network costs.

What is the feed-in tariff for 2022–23?

The solar feed-in tariff is 9.300 cents per kilowatt hour (c/kWh), 41 per cent higher than last year's tariff of 6.583 c/kWh (figure 1).

Figure 1 Solar feed-in tariff, 2021–22 and 2022–23



The key drivers of this increase are:

- higher wholesale energy costs—reflecting an increase in ASX contract prices, primarily due to a tighter supply-demand balance in Queensland, contributed to by the slowdown of renewable generation coming online and reduced availability of thermal generators. Other contributing factors include higher coal and gas prices as well as market uncertainty associated with the ability to cover price spikes in the NEM under a 5-minute settlement framework.
- higher ancillary services fees—reflecting the significant increased supply of local ancillary services required during the Queensland to New South Wales interconnector upgrade project.[1]

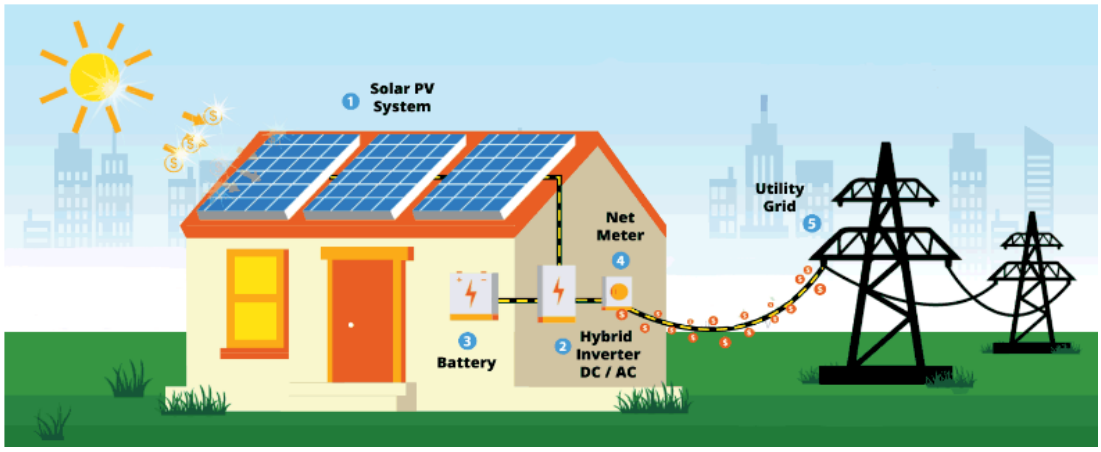
[1] More information about this project can be found on the Transgrid website.

1 INTRODUCTION

1.1 Solar feed-in tariffs

When a solar PV system produces more electricity than the premises is using or able to hold in battery storage, the surplus electricity can be exported, or 'fed', into the electricity network. Figure 2 shows how a simple solar PV system works.

Figure 2 Solar PV system



Note: Batteries are optional add-ons that can store surplus electricity generated by solar PV systems.

Source: ClimateBiz – How do solar panels work: step by step.

A solar feed-in tariff is the price, in cents per kilowatt hour (c/kWh)—that a retailer pays customers for these exports. A flat-rate feed-in tariff pays the same rate throughout the day for surplus electricity exported to the grid.

1.2 Minister's direction notice

The Minister for Energy, Renewables and Hydrogen (the Minister) has directed us to determine a feed-in tariff for regional Queensland to apply from 1 July 2022 to 30 June 2023.[2]

The direction indicates that in determining a flat-rate feed-in tariff, we should use the same general 'avoided cost' methodology applied since the 2014–15 tariff year and consider the following additional matters:

- the effect of the feed-in tariff on competition in the Queensland retail electricity market
- the arrangements in place for Origin Energy to provide retailer services to Queensland customers connected to the Essential Energy supply network in southern Queensland
- any other matter the QCA considers relevant.

The direction also specifies that no public consultation is required for the determination of this feed-in tariff, given that we are to apply the same methodology we used in previous years.

[2] The Minister's letter and direction notice are available in Appendix A and on our website.

1.3 Solar Bonus Scheme

The Queensland Solar Bonus Scheme is a Queensland Government scheme that pays eligible small customers[3] a prescribed flat-rate feed-in tariff for surplus electricity generated from solar PV systems.

Customers who applied for the scheme before 10 July 2012 and maintain their eligibility receive a feed-in tariff of 44 c/kWh until the scheme expires on 1 July 2028. Customers who applied from 10 July 2012 onwards received a feed-in tariff of 8 c/kWh until this feed-in tariff expired on 30 June 2014. The scheme was then closed to new customers.

The 8 c/kWh feed-in tariff was replaced on 1 July 2014 by a mandatory flat-rate feed-in tariff for regional Queensland, which we determine each financial year under the direction from the Minister.

1.4 Solar feed-in tariffs and retail prices differ

We are mindful that electricity prices are a primary concern for most stakeholders, along with the level of the feed-in tariff. We frequently receive queries as to why the feed-in tariff is not set at the same level as electricity prices so that it is a 'one-for-one' feed-in tariff.

The actual value of electricity generated by PV units is considerably less than the retail price, because when retailers source energy from PV customers, they only avoid some of their normal business costs (such as the cost of purchasing electricity from the NEM and the value of energy losses).

Retailers still incur normal business costs, including retail operating costs and network charges (figure 3). Therefore, a 'one-for-one' feed-in tariff would require the retailers to subsidise solar PV customers; and the cost of the subsidy would then need to be recovered through higher electricity prices.[4]

Figure 3 Costs incurred by retailers sourcing energy from PV customers

[3] A small customer is a residential customer or a business customer that consumes less than 100 MWh per year (as defined in the National Energy Retail Law, s. 5 and National Energy Retail Regulations, s. 7).

[4] For more detail, see Queensland Productivity Commission, *Solar feed-in pricing in Queensland*, final report, June 2016, pages 36–38 (particularly figure 17).

1.4.1 Solar feed-in tariffs in SEQ

Customers in the deregulated south-east Queensland electricity market can access a wide range of solar feed-in tariffs. This is because retailers in the competitive SEQ market use various pricing strategies to recover costs and target different customer segments. Such strategies result in a combination of supply, usage, and feed-in tariff rates that are generally bespoke to each individual retailer.

Higher feed-in tariffs in a competitive market may be a form of product differentiation aimed at attracting customers who export a lot of solar. In this instance, the offered feed-in tariff is bundled with other prices, and does not necessarily reflect the avoided cost of purchasing electricity from the NEM (the methodology we are required to use to determine the regional solar feed-in tariff).

While the feed-in tariffs may be higher than the avoided cost of purchasing electricity, they are sometimes offered along with restrictions or other charges that are also higher, such as:

- higher (in some cases much higher) daily supply and/or usage charges than the regulated retail prices we set for standing offer customers in regional Queensland
- other terms and conditions, such as limits on the size of a customer's solar PV system, or a lower feed-in tariff applied after a certain period
- higher supply and/or usage charges attached to solar offers than non-solar offers (for retailers with solar and non-solar offers)
- for market contracts, extra fees and charges, which are not applicable to standing offer contracts (e.g. late payment fees, credit card fees and paper bill fees).[5]

Customers should be mindful that the feed-in tariff is only one component of an electricity bill—the revenue received from solar exports should be viewed in conjunction with the associated supply and usage charges.

[5] Section 22A of the National Energy Retail Law (NERL) limits the types of fees that standing offer (standard contract) customers in Queensland can be charged. A retailer can only charge a historical billing data fee for data that is more than 2 years old, the retailer's administration fee for a dishonoured payment, and a financial institution fee for a dishonoured payment.

2 METHODOLOGY AND ADDITIONAL MATTERS

2.1 Estimation methodology

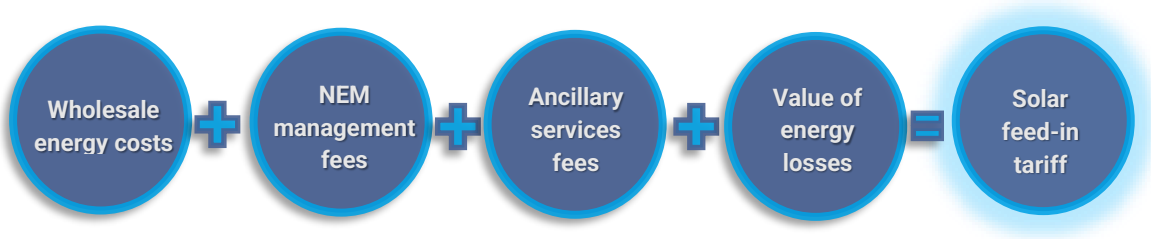
In determining the flat-rate solar feed-in tariff for regional Queensland in 2022–23, we have used the same 'avoided cost' methodology applied since the 2014–15 tariff year. This is consistent with the requirements of the direction notice.

In our first report on solar feed-in tariffs (2013), we outlined our rationale for applying the 'avoided cost' methodology to estimate a fair and reasonable feed-in tariff for the electricity exported to the grid by solar PV customers.[6] We consider that it is appropriate to maintain this approach to calculate the 2022–23 feed-in tariff for regional Queensland.

Avoided cost methodology

When a retailer sources electricity from solar PV customers rather than the NEM, it avoids some costs. The 'avoided cost' methodology estimates the feed-in tariff as the sum of the direct costs that a retailer avoids when it on-sells exported electricity from its solar PV customers to other customers. A tariff estimated in this way is efficient because it is based on the direct benefit that a retailer would receive if it on-sold a kilowatt of exported PV electricity at a cost-reflective price. Retailers still incur other costs associated with providing retail electricity services to customers, including retail operating costs and network costs. Figure 4 shows the cost components included in the calculation of the solar feed-in tariff.

Figure 4 Solar feed-in tariff cost components



The estimates of avoided costs that we used for this feed-in tariff determination are the same estimates we developed for the purposes of setting the 2022–23 regulated retail prices (notified prices) for regional Queensland.

The direction requires that we consider determining a single feed-in tariff rate to apply across regional Queensland, as with our previous determinations. To derive a single rate and address any competition considerations, we have based the feed-in tariff on the avoided cost of supply in the Ergon Distribution east pricing zone, transmission region one (see section 2.2.1).

2.2 Additional matters in the terms of reference

2.2.1 Competition considerations

The terms of reference require that we consider the effect of the feed-in tariff on competition in the Queensland retail electricity market. We consider that the policy intent of this requirement

[6] QCA, *Estimating a fair and reasonable solar feed-in tariff for Queensland*, final report, March 2013.

is to ensure that the feed-in tariff we decide does not impede the development of retail competition in regional Queensland.

Unlike in south-east Queensland, competition in the small customer market has not developed in regional Queensland, primarily due to the subsidy arrangements with Ergon Energy Retail (the incumbent retailer in regional Queensland[7]) that underpin the Queensland Government's uniform tariff policy.

We consider a mandatory feed-in tariff that is above the avoidable cost associated with on-selling solar PV electricity could make it difficult for other retailers (who are not subsidised by the government) to compete with Ergon Retail, thereby discouraging them from entering the market.

Our considerations on this matter in previous determinations remain relevant and applicable this year:

- The feed-in tariff should be based on the avoided costs of supply incurred in the Ergon Distribution pricing region with the lowest average cost of supply (i.e. east pricing zone, transmission region one).[8]
- Using the weighted-average avoided costs for all of Ergon Distribution pricing regions would impose a feed-in tariff that is above the value of PV exports in the east pricing zone, where over 90 per cent of customers in regional Queensland reside.
- Given the concentration of customers in the east pricing zone, it is also the area where competition is most likely to develop initially, so implementing a feed-in tariff that is above the level in the east pricing zone area could discourage new market entrants into regional Queensland and influence potential retailers' willingness to supply solar PV customers.

For these reasons, we consider that the most appropriate basis for the single flat-rate feed-in tariff is the avoided cost of supply in the Ergon Distribution east pricing zone, transmission region one.

2.2.2 Arrangements for Queensland customers on the Essential Energy network

Origin Energy supplies around 5,700 customers in the Goondiwindi, Texas and Inglewood areas of southern Queensland who are connected to Essential Energy's distribution network. Some of these customers have accessed the mandatory feed-in tariff, as determined by us, since 2014–15. The terms of reference require that we consider this arrangement when deciding the feed-in tariff for 2022–23.

These customers are supplied by Origin at notified prices in much the same way as Ergon Retail supplies customers throughout the rest of regional Queensland. Like Ergon Retail, Origin incurs a financial loss to supply these customers at notified prices (which are lower than the actual cost of supply) and is therefore subsidised by the Queensland Government to underwrite this loss.

Transmission and distribution losses differ between the Ergon network area and Essential Energy area in southern Queensland. However, we consider that a single flat-rate feed-in tariff should also be available to customers in the Essential Energy area in southern Queensland. This is consistent with:

[7] Ergon Energy Queensland Pty Ltd (electricity retail arm).
[8] East zone, transmission region one has the lowest average cost of supply among Ergon Distribution pricing regions that are connected to the NEM.

- our approach for previous determinations
- the intent of the terms of reference, which require a single feed-in tariff to be applied across regional Queensland
- the definition of the feed-in tariff in the *Electricity Act 1994* (Qld).[9]

[9] Section 92 of the Electricity Act defines the feed-in tariff as an amount that must be credited by a prescribed retailer—that is, Ergon Retail and Origin Energy (only for Queensland customers on the Essential Energy network)—to a qualifying customer for each unit of electricity that is produced by a small PV generator and supplied to the network.

3 ESTIMATED SOLAR FEED-IN TARIFF FOR 2022–23

3.1 Estimated feed-in tariff

We have estimated the feed-in tariff for regional Queensland for 2022–23 at 9.300 c/kWh.

The feed-in tariff value has been calculated as the sum of the costs that a retailer avoids when it on-sells a unit of electricity exported by its solar customers. The sum of these avoided costs is estimated to be 2.717 c/kWh higher in 2022–23 than in 2021–22 (Table 1).

Table 1 Feed-in tariff for regional Queensland, 2021–22 and 2022–23

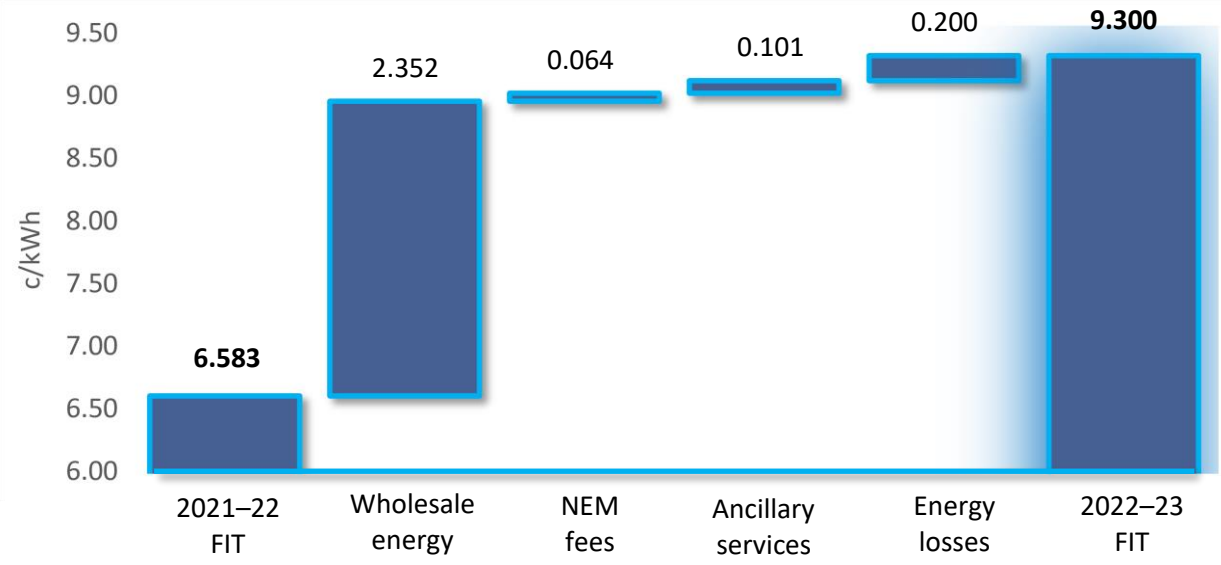
Avoided costs	*Feed-in tariff (c/kWh)*		*Change (c/kWh)*
	2021–22	*2022–23*	
Wholesale energy costs	6.109	8.461	2.352
NEM management fees	0.049	0.113	0.064
Ancillary services fees	0.041	0.142	0.101
Value of energy losses	0.384	0.584	0.200
Feed-in tariff (FIT)	**6.583**	**9.300**	**2.717**

Estimates exclude GST. Totals may not add up due to rounding.

Source: ACIL Allen, Estimated Energy Costs, final report prepared for the QCA, May 2022; QCA calculations.

Of these avoided costs, higher wholesale energy costs are the largest contributor to the increase of the 2022–23 feed-in tariff (figure 5).

Figure 5 Changes in the components of the feed-in tariff for regional Queensland



Estimates exclude GST. Totals may not add up due to rounding.

Source: ACIL Allen, Estimated Energy Costs, final report prepared for the QCA, May 2022; QCA calculations.

3.1.1 Wholesale energy costs

When retailers on-sell a unit of electricity from their solar customers to other customers, they avoid having to purchase that unit of electricity from the NEM. Generally, retailers on-sell solar

electricity to other small customers, as solar PV systems tend to be located in residential areas, and electricity (when exported to the distribution grid) typically travels to the closest household/small business where electricity is demanded. Thus, when retailers on-sell solar electricity, they generally avoid having to purchase electricity from the NEM for small customers.

The Ergon net system load profile (NSLP) approximates how much electricity is consumed by customers who use accumulation meters[10] in the Ergon network area. As the majority of small customers in regional Queensland use accumulation meters, we consider that the consumption profile of the Ergon NSLP is the most appropriate basis to estimate the avoided wholesale energy costs for the feed-in tariff for regional Queensland. To estimate the avoided wholesale energy costs, we have used the forecast wholesale energy costs of supply in the Ergon NSLP—estimated by ACIL Allen for the determination of the 2022–23 notified prices.

For 2022–23, we have estimated the avoided wholesale energy costs to be 8.461 c/kWh (Table 2), which is 38.5 per cent higher than it was for the 2021–22 determination. This increase is due to an increase in the trade-weighted contract prices,[11] primarily reflecting:

- the slowdown of renewable generation coming online (compared to recent years) and the continued unavailability of Callide C Power Plant (unit 4), which have both contributed to a tighter supply–demand balance in Queensland
- higher gas and coal prices
- uncertainties faced by cap contract providers around the ability of their peaking plants to cover price spikes in the NEM under a 5-minute settlement.

A detailed explanation of ACIL Allen's wholesale energy costs methodology is available in its 2022–23 report[12] and in our final determination of the 2022–23 notified prices.[13]

Table 2 Wholesale energy costs in regional Queensland, 2022–23 (before energy losses)

Demand profile	***c/kWh***
Ergon NSLP	8.461

Estimates exclude GST.

Source: ACIL Allen, Estimated Energy Costs, final report prepared for the QCA, May 2022.

3.1.2 NEM management and ancillary services fees

Retailers purchasing electricity from the NEM are required to pay NEM management fees and ancillary services charges to AEMO. NEM management fees are levied by AEMO to cover its costs related to:

- operating the NEM
- full retail contestability

[10] Unlike smart/digital meters, accumulation meters do not record when during the day electricity was consumed or how much was consumed at that time. To allow for half-hourly settlement within the NEM (with different spot prices and volumes for each half hour), AEMO uses the NSLP to approximate the amount of electricity consumed by customers on accumulation meters in a region, for each half hour of the day.

[11] Contract prices were estimated using the trade-weighted average of ASX Energy daily settlement prices of base, peak and cap contracts for 2022–23.

[12] ACIL Allen, *Estimated Energy Costs*, final report prepared for the QCA, May 2022.

[13] QCA, *Regulated retail electricity prices 2022–23*, Technical Appendix C, final report, 2022.

- funding of Energy Consumers Australia.

Ancillary services charges cover the costs of services used by AEMO to manage power system safety, security and reliability. These services maintain key technical characteristics of the electricity grid, including standards for frequency, voltage, network loading and system restart processes. Ancillary services are divided into three major categories—Frequency control Ancillary Services (FCAS), Network Support Control Ancillary Services (NSCAS) and System Restart Ancillary Services (SRAS).

NEM management fees and ancillary services fees are paid based on the net energy purchased by retailers. The net energy purchased is measured by AEMO at the regional reference node. Retailers therefore avoid paying these fees when they avoid purchasing energy from the NEM by on-selling solar PV electricity.

To estimate these avoided costs, we have used the NEM management and ancillary services fees estimated by ACIL Allen in calculating notified prices for 2022–23 (Table 3). ACIL Allen has estimated:

- the NEM fees using fees in AEMO's budget and fees for 2021–22[14]
- the ancillary services fees using the average ancillary service payments[15] observed over the preceding 52 weeks.

NEM fees for 2022–23 are estimated to be 0.113 c/kWh, which is 131 per cent higher than it was for the 2021–22 determination. This increase primarily reflects the increase in costs related to operating the NEM, including costs associated with 5-minute settlement compliance and the distributed energy resource (DER) integration program.

Ancillary services charges for 2022–23 are estimated to be 0.142 c/kWh, which is 246 per cent higher than the estimates for 2021–22. The significant increase in the costs of ancillary services reflects outages that relate to upgrades of the Queensland to New South Wales interconnector (QNI), limiting the ability to acquire potentially less expensive ancillary services from other regions in the NEM.

A more detailed explanation of ACIL Allen's methodology is available in its 2022–23 report.[16]

Table 3 NEM management and ancillary services fees, 2022–23 (before energy losses)

Fees	***c/kWh***
NEM management fees	0.113
Ancillary services fees	0.142
Total	**0.255**

Estimates are exclusive of GST. Totals may not add up due to rounding.

Source: ACIL Allen, Estimated Energy Costs, final report prepared for the QCA, May 2022.

[14] AEMO, *2021–22 AEMO Budget and Fees*, 2021.

[15] AEMO provides data on weekly settlements for ancillary service payments in each interconnected region within the NEM.

[16] ACIL Allen, *Estimated Energy Costs*, final report prepared for the QCA, May 2022.

3.1.3 Value of energy losses

One benefit of distributed generation[17], including solar PV, is that it reduces the need to transport energy across long distances and therefore largely avoids costs associated with transmission and distribution losses. Retailers are therefore able to avoid energy losses when they on-sell PV exports. The value of these avoided losses needs to be included in the feed-in tariff.

To estimate the value of avoided energy losses, we have adopted the loss factors for the Ergon NSLP, as used in our final determination of the 2022–23 notified prices. These loss factors are:

- the average energy-weighted transmission loss factor—estimated by ACIL Allen, using the loss factors and energy consumed at each of the Transmission Node Identities (TNIs)[18] provided by AEMO
- the distribution loss factor for small customers, published by AEMO.

The distribution loss factor is multiplied by the average weighted transmission marginal loss factor to arrive at the total combined loss factor (Table 4).

Table 4 Loss factors for small customers in Ergon east pricing zone, 2022–23

Calculation of total combined loss factor		
Transmission marginal loss factor (A)	**Distribution loss factor (B)**	**Total combined loss factor (A*B)**
0.985	1.083	**1.067**

Notes: 1. The relevant Ergon pricing zone is the Ergon east pricing zone, transmission region one. 2. For presentation purposes, figures in this table have been rounded from the figures originally reported by ACIL Allen. Therefore, the combined loss factor may not multiply exactly.

Source: ACIL Allen, Estimated Energy Costs, final report prepared for the QCA, May 2022.

A total combined loss factor of 1.067 translates to an energy loss of 6.7 per cent. The combined loss factor has increased around 0.5 percentage points compared with the 2021–22 determination, reflecting higher distribution losses.

The value of avoided energy losses is estimated by multiplying the avoided wholesale energy costs, NEM management fees and ancillary services fees with the percentage energy loss. This results in an estimated value of energy losses of 0.584 c/kWh for 2022–23.

[17] Distributed generation is electrical generation and storage performed by a variety of small, grid-connected or distribution-system-connected devices.

[18] TNIs are metered connection points that link the transmission network to the distribution network.

APPENDIX A: MINISTERIAL DIRECTION

Queensland Government

Minister for Energy, Renewables and Hydrogen
Minister for Public Works and Procurement

Our Ref: MN07763-2021

16 DEC 2021

1 William Street
Brisbane Queensland
GPO Box 2457 Brisbane
Queensland 4001 Australia
Telephone [redacted]
E: hpwdts@ministerial.qld.gov.au

Professor Flavio Menezes
Chair
Queensland Competition Authority
GPO Box 2257
BRISBANE QLD 4001
By email: carola.hofmann@qca.org.au

Dear Professor Menezes Flavio

I am writing to direct the Queensland Competition Authority (the Authority) under section 93 of the *Electricity Act 1994* (the Act) to decide the feed-in tariff (FiT) rate for the tariff year 1 July 2022 to 30 June 2023 (2022-23).

I attach the direction and associated Terms of Reference (ToR) which impose conditions and timeframes on the Authority when undertaking its investigation.

My section 93 direction requires the Authority to decide a FiT rate for 2022–23 consistent with the methodology used to decide the 2021–22 regional FiT rate of 6.583 cents per kilowatt hour (kWh). Given that the methodology and approach are unchanged, no public consultation is required in deciding the 2022–23 FiT.

If you have any questions, [redacted] Executive Director, Energy Division, Department of Energy and Public Works, will be pleased to assist you and can be contacted on telephone [redacted] or email [redacted]

Yours sincerely

Mick de Brenni MP
Minister for Energy, Renewables and Hydrogen and
Minister for Public Works and Procurement

Encl: Section 93 Direction and Terms of Reference

ELECTRICITY ACT 1994
Section 93

As the Minister for Energy, Renewables and Hydrogen, pursuant to section 93 of the *Electricity Act 1994* (the Act), I hereby direct the Queensland Competition Authority (the Authority) to decide a flat rate feed-in tariff for the 2022-23 tariff year.

The following are the Terms of Reference pertaining to this direction.

Terms of Reference

Matters to consider
In accordance with section 93(2) and 93(3) of the Act, in deciding the feed-in tariff the Authority must consider the following:

1. The flat rate feed-in tariff should be decided using the general 'avoided cost' methodology applied for the 2014–15, 2015–16, 2016–17, 2017–18, 2018–19, 2019–20 2020-21 and 2021-22 tariff years.

2. The effect of the feed-in tariffs on competition in the Queensland retail electricity market.

3. The matters described below:
   - The arrangements in place for Origin Energy to provide retailer services to Queensland customers connected to the Essential Energy supply network in southern Queensland
   - Any other matter the Authority considers relevant.

Application of the feed-in tariffs

The flat rate feed-in tariff is to apply for the period 1 July 2022 to 30 June 2023.

Consultation

No public consultation is required to decide the 2022–23 flat rate feed-in tariff given that the Authority must apply the same methodology as was applied in previous tariff years.

Timing

The Authority is to decide the flat rate feed-in tariff and, in accordance with section 94 of the Act, announce the flat rate feed-in tariff on the Authority's website and publish the feed-in tariff via Gazette Notice no later than 31 May 2022.

This delegation is made by **The Honourable Mick de Brenni MP**, Minister for Energy, Renewables and Hydrogen and Minister for Public Works and Procurement:

Signed:

The Honourable Mick de Brenni MP
Minister for Energy, Renewables and Hydrogen and
Minister for Public Works and Procurement

Dated: 16/12/2021

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