

Queensland Competition Authority

Determination

2020–21 Solar feed-in tariff

Regional Queensland

May 2020

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EXECUTIVE SUMMARY

The Queensland Competition Authority has been directed to determine the 2020–21 solar feed-in tariff for regional Queensland.

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

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



Feed-in tariff for 2020–21

The 2020–21 feed-in tariff for regional Queensland is 7.861 cents per kilowatt hour (c/kWh). This is 0.2% (0.019 c/kWh) higher than last year's feed-in tariff of 7.842 c/kWh. This marginal increase is driven mainly by higher ancillary services fees and energy losses, which were mostly offset by a decline in wholesale energy costs.

These estimates are based on the analysis from our consultant, ACIL Allen. We consider that ACIL Allen's methodology has adequately taken into account the potential impacts of covid-19 on the National Electricity Market (NEM) through the incorporation of contract prices up till early May 2020. These contract prices reflect, to date, the market participants' views of the impacts of covid-19 on the NEM.

Key drivers:

- higher ancillary services charges—reflecting a surge in demand for ancillary services, including due to the Basslink interconnector outage in Tasmania, the planned outage of the Heywood to Mortlake line in Victoria and the extended power system separation event between South Australia and Victoria.
- higher energy losses—reflecting higher distribution and transmission losses as published by the Australian Energy Market Operator.
- lower wholesale energy costs—reflecting a decline in contract prices primarily due to the large amount of renewable generation entering the NEM and the reduction in gas prices.



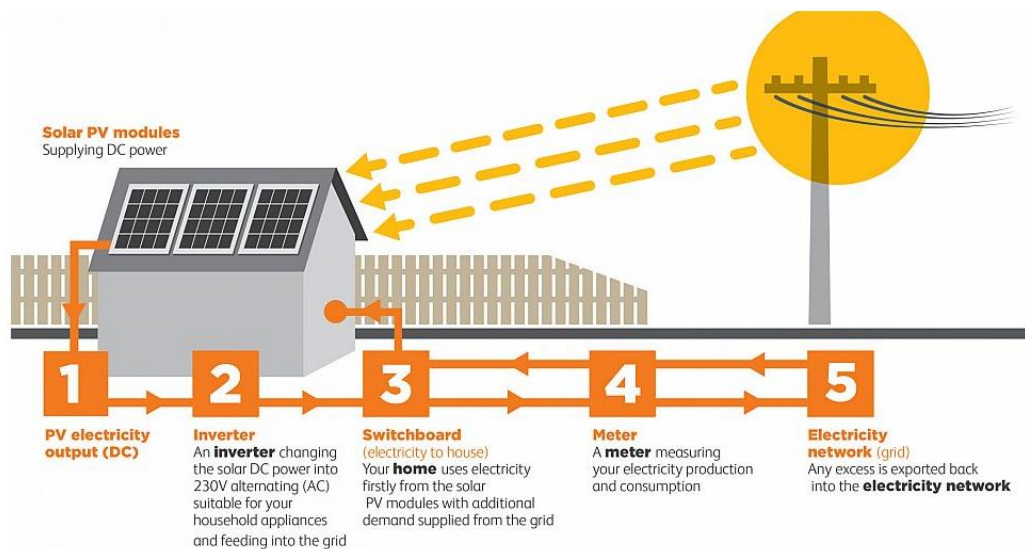
More information

Enquiries regarding this report can be made on the QCA [website](#).

1 INTRODUCTION

1.1 Solar feed-in tariffs

When a solar photovoltaic (PV) system produces more electricity than the premises is using, the surplus electricity can be exported, or 'fed in', to the electricity network. The figure below shows how a simple solar PV system works.



Source: Clean Energy Council website.

A solar feed-in tariff is the price, in cents per kilowatt hour (c/kWh)—that a retailer pays solar 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 Natural Resources, Mines and Energy (the Minister) has directed the Queensland Competition Authority (QCA) to determine a feed-in tariff for regional Queensland for 2020–21.¹

The direction indicates that, in determining a flat-rate feed-in tariff, the QCA 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.

¹ The Minister's letter and direction notice are available on our [website](#).

1.3 Solar Bonus Scheme

The Queensland Solar Bonus Scheme is a Queensland Government policy administered by the Department of Natural Resources, Mines and Energy. The scheme pays eligible small customers² 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, determined by the QCA each financial year under the direction from the Minister.

1.4 Solar feed-in tariffs and retail prices differ

We are mindful that the magnitude of electricity prices is 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 costs of purchasing electricity from the NEM and energy losses). However, they still incur most of their normal business costs (including retail operating costs and network charges). 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.³

² The National Energy Retail Law, section 5 and National Energy Retail Regulations, section 7 define a small customer as a residential customer or a business customer that consumes less than 100 MWh per annum.

³ For more detail, see Queensland Productivity Commission, *Solar feed-in pricing in Queensland*, final report, June 2016, pages 36–38 (particularly figure 17).

2 METHODOLOGY AND ADDITIONAL MATTERS

2.1 Estimation methodology

The direction indicates that, in determining a flat-rate feed-in tariff, the QCA should use the same 'avoided cost' methodology applied since the 2014–15 tariff year.

We have interpreted the instruction in the Minister's direction that relates to feed-in tariff methodology and structure as a requirement to consider applying the same methodology used since 2014–15 to estimate a flat-rate feed-in tariff for regional Queensland in 2020–21.

In our first report on solar feed-in tariffs (March 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.⁴ We consider that it is appropriate to maintain this approach to calculate the 2020–21 feed-in tariff for regional Queensland.



Avoided cost methodology

The 'avoided cost' methodology estimates the value of an efficient feed-in tariff as the sum of the direct financial costs that a retailer avoids when it on-sells exported electricity from its solar PV customers to other customers.

When a retailer sources electricity from solar PV customers rather than the NEM, it avoids some direct financial costs. These avoidable costs are:

- wholesale energy costs
- NEM management fees
- ancillary services fees
- transmission and distribution losses (energy losses).

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

The estimates of avoided costs that we used for this feed-in tariff determination are the same estimates we developed—with advice from ACIL Allen—for the purposes of setting the 2020–21 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 decided to base the feed-in tariff on the avoided cost of supply in the Ergon Distribution east pricing zone, transmission region one with our considerations set out in section 2.2.

⁴ QCA, *Estimating a fair and reasonable solar feed-in tariff for Queensland*, final report, March 2013.

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

Ergon Retail is the incumbent retailer in regional Queensland.⁵ Unlike in south east Queensland, competition in the small customer market has not developed in regional Queensland, primarily due to the subsidy arrangements that underpin the Queensland Government's Uniform Tariff Policy.

As we noted in previous determinations, it is important to balance the need to provide a feed-in tariff that is fair, while not setting it so high as to discourage potential new entrants from entering the market in regional Queensland. A mandatory feed-in tariff that is above the efficient level—that is, the avoidable cost associated with on-selling solar PV electricity—might be sustainable for Ergon Retail, as its loss is underwritten by the Queensland Government. However, such a feed-in tariff 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.

In light of this concern, we consider that 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).⁶ Adopting an alternative approach—such as using the weighted-average avoided costs for all of Ergon Distribution pricing regions—would impose a feed-in tariff that is above the efficient value of PV exports in some regions, particularly 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 efficient level in this area could discourage new market entrants into regional Queensland and influence potential retailers' willingness to supply solar PV customers. Basing the feed-in tariff on the avoided costs in an area with a relatively low cost of supply reduces the risk of setting mandatory feed-in tariffs above the efficient level, which could impede the development of effective competition in regional Queensland.

For these reasons, we continue to 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 5700 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 the QCA, since 2014–15. The terms of reference require that we consider this arrangement when deciding the feed-in tariff for 2020–21.

⁵ Ergon Energy Queensland Pty Ltd (electricity retail arm).

⁶ East zone, transmission region one has the lowest average cost of supply among Ergon Distribution pricing regions that are connected to the NEM.

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 efficient cost of supply) and is subsidised by the Queensland Government to underwrite this loss.

Transmission and distribution losses will 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:

- 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 under section 92 of the *Electricity Act 1994* (Qld).⁷

⁷ Section 92 of the Electricity Act defines the feed-in tariff as an amount that must be credited by a prescribed retail entity—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 2020–21

3.1 Estimated feed-in tariff

We have estimated the feed-in tariff for regional Queensland for 2020–21 at 7.861 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. Of these avoided costs, wholesale energy costs form the largest proportion (Table 1).

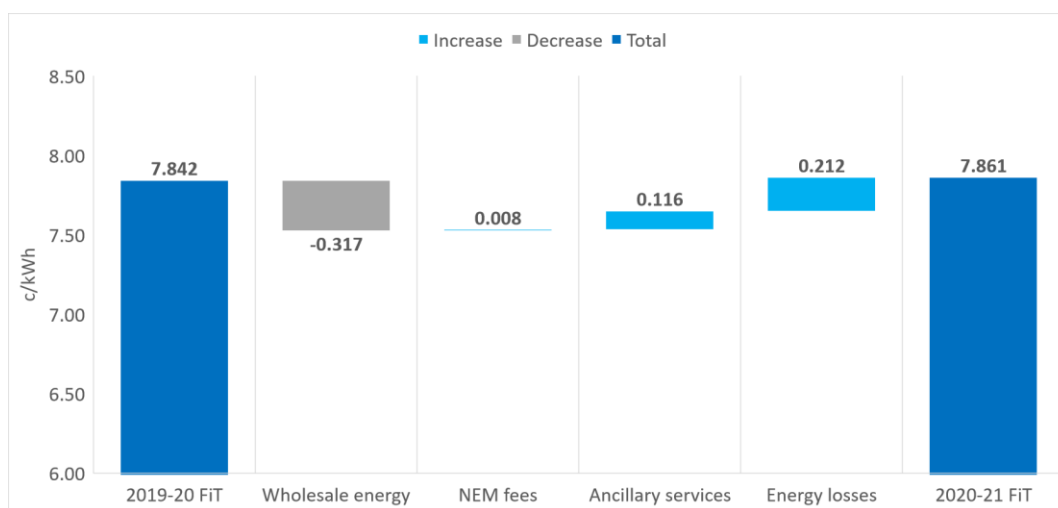
Table 1 Comparison of feed-in tariff for regional Queensland, 2019–20 and 2020–21

Avoided costs	c/kWh		Change (c/kWh)
	2019–20	2020–21	
Wholesale energy costs	7.558	7.241	–0.317
NEM management fees	0.063	0.071	0.008
Ancillary services fees	0.037	0.153	0.116
Value of energy losses	0.184	0.396	0.212
Feed-in tariff (FIT)	7.842	7.861	0.019

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

Source: ACIL Allen, *Estimated Energy Costs: 2020–21 Retail Tariffs*, forthcoming; QCA calculations.

Figure 1 Changes in the components of feed-in tariff for regional Queensland



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

Source: ACIL Allen, *Estimated Energy Costs: 2020–21 Retail Tariffs*, forthcoming; 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 meters⁸ in the Ergon network area, for each half hour of the day. 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 (WEC) for the feed-in tariff for regional Queensland. To estimate the avoided WEC, we have used the forecast WEC of supplying the Ergon NSLP—estimated by ACIL Allen for the determination of the 2020–21 notified prices.

For 2020–21, we have estimated the avoided WEC to be to be 7.241 c/kWh (Table 2). This is 4.2 per cent lower than it was for the 2019–20 determination. This decrease reflects a decline in the trade-weighted contract prices⁹ largely due to market expectations aligning with the softening spot prices driven by the large amount of renewable generation entering the NEM and the reduction in gas prices. The reduction in domestic gas prices is due to a slightly better global supply outlook, which has meant LNG exporters have made more supply available to the domestic market due to depressed international gas prices.

However, this decrease is partially offset by the projected increase in the uptake of rooftop solar PV in the Ergon area, which reduces the electricity consumed from the grid during periods when wholesale electricity spot prices tend to be lower (i.e. daylight hours). Such a development increases the WEC of the Ergon NSLP, because a greater proportion of the electricity from the grid is consumed during the evening and morning peak periods when spot prices are higher.

We consider that ACIL Allen’s methodology has adequately taken into account the potential impacts of covid-19 on the NEM through the incorporation of contract data up till 8 May 2020. These contract prices reflect, to date, the market participants’ views of the impacts of covid-19, as well as other drivers, on the NEM. Further, to estimate the WEC, ACIL Allen’s methodology uses a large amount of simulations (i.e. 539 simulations), which cover a wide range of demand outcomes and likely adequately capture the volume risks¹⁰ that retailers face.

A more detailed explanation of ACIL Allen’s WEC methodology is available in its 2020–21 report.¹¹

Table 2 Wholesale energy costs in regional Queensland, 2020–21 (before energy losses)

<i>Settlement class</i>	<i>c/kWh</i>
Ergon NSLP	7.241

Estimates are exclusive of GST.

Source: ACIL Allen, Estimated Energy Costs: 2020–21 Retail Tariffs, forthcoming.

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 the Australian Energy Market Operator (AEMO). NEM management fees are levied by AEMO to cover its costs related to:

⁸ 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.

⁹ Contract prices were estimated using the trade-weighted average of ASX Energy daily settlement prices of base, peak and cap contracts for 2020–21.

¹⁰ Volume risks in this context refer to the financial risks associated with the exposure to fluctuation in the demand of electricity that needs to be sourced from the NEM.

¹¹ ACIL Allen Consulting, *Estimated Energy Costs, 2020–21 Retail Tariffs*, prepared for the QCA, forthcoming.

- operating the NEM
- performing its function as the National Transmission Planner
- full retail contestability
- 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 2020–21 (Table 3). ACIL Allen has estimated:

- the NEM fees using projected fees in AEMO's final budget and fees for 2019–20¹²
- the ancillary services fees using the average ancillary service payments¹³ observed over the preceding 52 weeks.

NEM fees for 2020–21 are estimated to be 0.071 c/kWh, an increase of 0.008 c/kWh compared with the 2019–20 determination. This increase primarily reflects the higher costs that AEMO expects to incur when managing the NEM. AEMO noted that increased complexities in managing the grid and the changing nature of generation meant that further investment will be required to manage the NEM.¹⁴

Ancillary services charges for 2020–21 are estimated to be 0.153 c/kWh, an increase of 0.116 c/kWh compared with the 2019–20 determination. This increase is due to several events leading to a surge in demand for FCAS, including:

- the Basslink interconnector outage (August 2019 to October 2019)
- the planned outage of the Heywood to Mortlake line (September 2019)
- the 'islanding'¹⁵ of the South Australian electricity grid due to an outage of the Heywood interconnector (November 2019)
- the extended power system separation between South Australia and Victoria (January to February 2020).¹⁶

A more detailed explanation of ACIL Allen's methodology is available in its 2020–21 report.¹⁷

¹² AEMO, *2019–20 Final Budget and Fees*, June 2019.

¹³ AEMO provides data on weekly settlements for ancillary service payments in each interconnected region within the NEM.

¹⁴ AEMO, *2019–20 Final Budget and Fees*, June 2019, p. 7.

¹⁵ Islanding occurs when a jurisdiction's electricity network is disconnected from the rest of the NEM.

¹⁶ AEMO, *Quarterly Energy Dynamics—Q1 2020*, April 2020.

¹⁷ ACIL Allen Consulting, *Estimated Energy Costs, 2020–21 Retail Tariffs*, prepared for the QCA, forthcoming.

Table 3 NEM management and ancillary services fees, 2020–21 (before energy losses)

<i>Fees</i>	<i>c/kWh</i>
NEM management fees	0.071
Ancillary services fees	0.153
Total	0.224

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

Source: ACIL Allen, Estimated Energy Costs: 2020–21 Retail Tariffs, forthcoming.

3.1.3 Energy losses

One benefit of distributed generation¹⁸, including solar PV, is that it reduces the need to transport energy across long distances and therefore largely removes 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 2020–21 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 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, 2020–21

<i>Item</i>	<i>Loss factor</i>
Transmission marginal loss factor (energy-weighted)	0.964
Distribution loss factor	1.093
Total combined loss factor	1.053

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 does not multiply exactly.

Source: ACIL Allen, Estimated Energy Costs: 2020–21 Retail Tariffs, forthcoming.

A total combined loss factor of 1.053 translates to an energy loss of 5.3 per cent. 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.

The combined loss factor has increased around 3 per cent compared with the 2019–20 determination, with increases in both transmission and distribution loss factors. The key driver for the change in transmission losses in Queensland is an increase in projected output from new renewable generation, which is partially offset by the expected system strength (network) limits imposed in northern Queensland.¹⁹

¹⁸ Distributed generation is electrical generation and storage performed by a variety of small, grid-connected or distribution-system-connected devices.

¹⁹ AEMO, *Regions and Marginal Loss Factors: FY 2020–21*, April 2020.

APPENDIX A: MINISTERIAL DIRECTION



The Hon Dr Anthony Lynham MP
Minister for Natural Resources, Mines and Energy

Ref CTS 23694/19

10 DEC 2019

1 William Street Brisbane
PO Box 15216 City East
Queensland 4002 Australia
Telephone +61 7 3719 7360
Email nrm@ministerial.qld.gov.au
www.dnrme.qld.gov.au

Professor Flavio Menezes
Chair
Queensland Competition Authority
Level 27, 145 Ann Street
BRISBANE QLD 4000

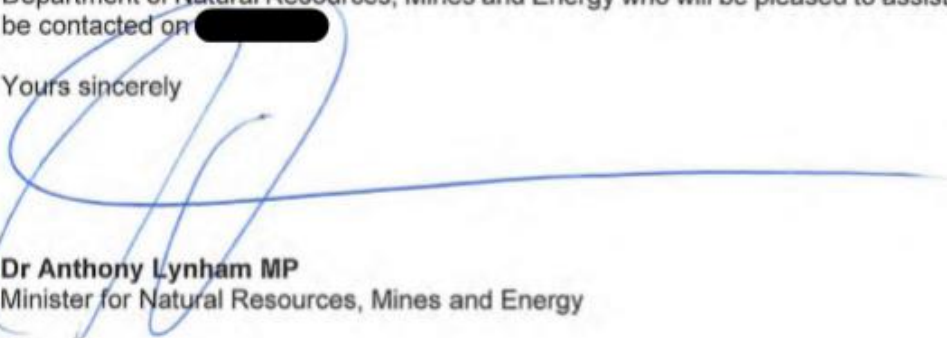
Dear Professor Menezes

I am writing to direct the Queensland Competition Authority (QCA) under section 93 of the *Electricity Act 1994* (the Act) to decide the feed-in tariff (FIT) rate for the 2020–21 tariff year. I attach my direction and the associated terms of reference which impose conditions and timeframes on the Authority when undertaking its investigation and advice.

My section 93 direction requires the QCA to decide a flat FIT rate for 2020–21 consistent with the methodology used to decide the 2019–20 regional FIT rate of 7.842 cents. Given that the methodology and approach are unchanged, no public consultation is required in deciding the 2020–21 FIT.

If you have any questions, please contact [REDACTED], Director, Innovative Energy Solutions, Department of Natural Resources, Mines and Energy who will be pleased to assist you and can be contacted on [REDACTED].

Yours sincerely



Dr Anthony Lynham MP
Minister for Natural Resources, Mines and Energy

Att

