Queensland Competition Authority

Determination

2021–22 Solar feed-in tariff

Regional Queensland

June 2021

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EXECUTIVE SUMMARY

The Queensland Competition Authority (QCA) has been directed to determine the 2021–22 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 financial 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.

Feed-in tariff for 2021–22

The 2021–22 feed-in tariff for regional Queensland is 6.583 cents per kilowatt hour (c/kWh). This is 16.2 per cent lower than last year's feed-in tariff of 7.861 c/kWh. This is driven mainly by a decline in both wholesale energy costs and ancillary services fees.

Key drivers are:

- lower wholesale energy costs—reflecting a decline in ASX contract prices, primarily due to the large amount of renewable generation entering the NEM
- lower ancillary services fees—reflecting the commissioning of additional generation supply, which offers ancillary services to this relatively small market.

These estimates have taken into account the potential impacts of covid-19 on the NEM including through the incorporation of ASX contract prices up until early May 2021. These contract prices reflect, to date, the market participants' views of the impacts of covid-19 on the NEM.

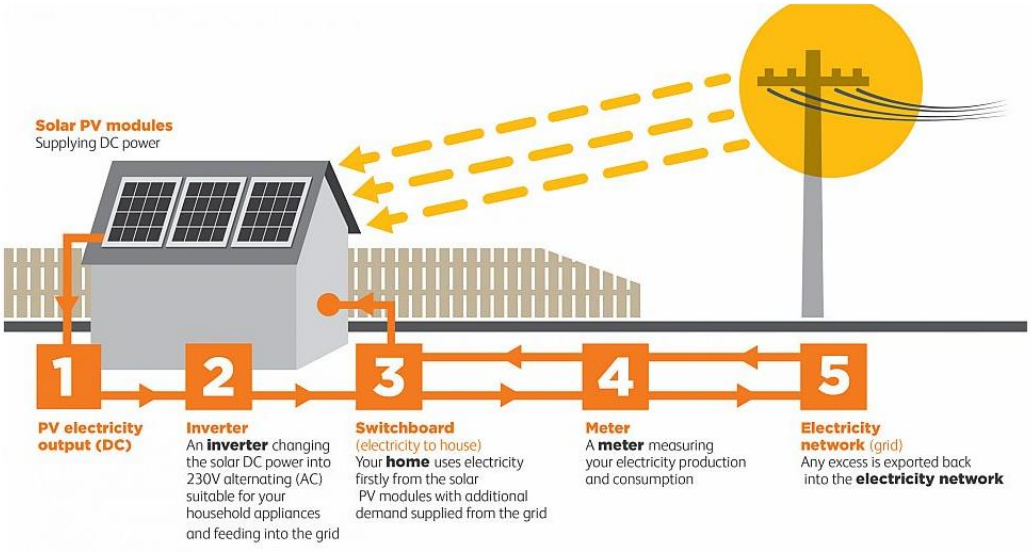
More information

Enquiries regarding this report can be made on the QCA website.

1 INTRODUCTION

1.1 Solar feed-in tariffs

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



Source: Clean Energy Council.

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 Energy, Renewables and Hydrogen (the Minister) has directed us to determine a feed-in tariff for regional Queensland for 2021–22.[1]

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 that was used in previous years.

[1] 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[2] 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 us 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). 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, s. 5 and National Energy Retail Regulations, s. 7 define a small customer as a residential customer or a business customer that consumes less than 100 MWh per year.

[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

In determining the flat-rate solar feed-in tariff for regional Queensland in 2021–22, 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 (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 2021–22 feed-in tariff for regional Queensland.

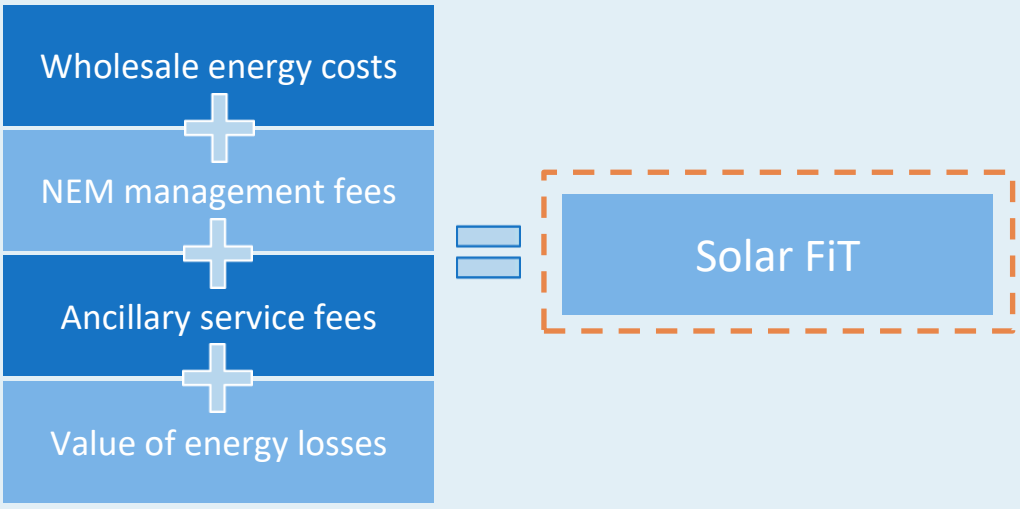
Avoided cost methodology

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
- value of 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.



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

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 2021–22 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 (see section 2.2).

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.

[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.

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 2021–22.

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 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:

- 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), s. 92.[7]

[7] 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 2021–22

3.1 Estimated feed-in tariff

We have estimated the feed-in tariff for regional Queensland for 2021–22 at 6.583 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).

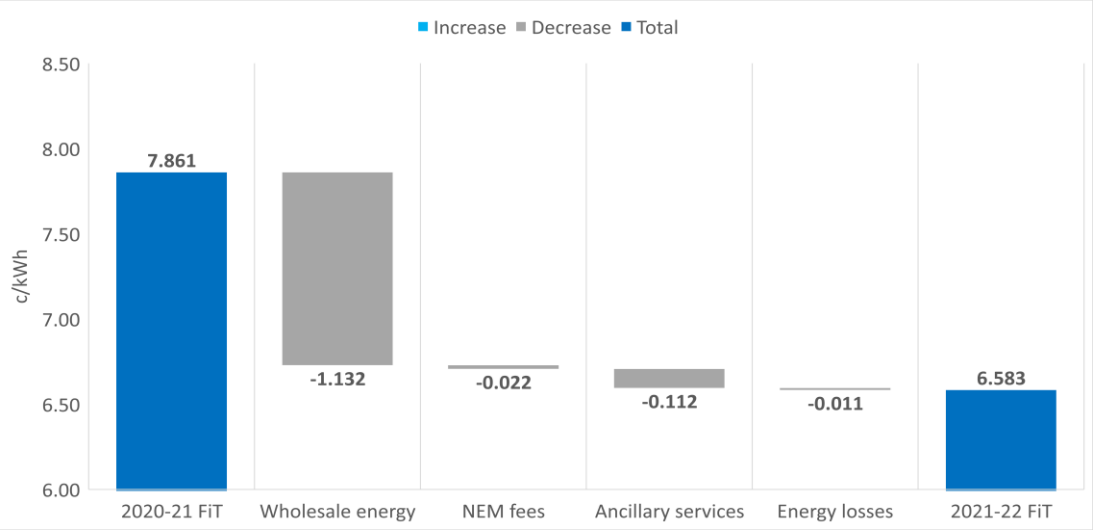
Table 1 Comparison of feed-in tariff for regional Queensland, 2020–21 and 2021–22

Avoided costs	*Feed-in tariff (c/kWh)*		*Change (c/kWh)*
	2020–21	*2021–22*	
Wholesale energy costs	7.241	6.109	–1.132
NEM management fees	0.071	0.049	–0.022
Ancillary services fees	0.153	0.041	–0.112
Value of energy losses	0.396	0.384	–0.011
Feed-in tariff (FiT)	**7.861**	**6.583**	**–1.277**

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

Source: ACIL Allen, Estimated Energy Costs, final report prepared for the QCA, May 2021; QCA calculations.

Figure 1 Changes in the components of 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 2021; 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[8] 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 for the feed-in tariff for regional Queensland. To estimate the avoided wholesale energy costs, we have used the forecast wholesale energy costs of supplying the Ergon NSLP—estimated by ACIL Allen for the determination of the 2021–22 notified prices.

For 2021–22, we have estimated the avoided wholesale energy costs to be 6.109 c/kWh (Table 2). This is 15.6 per cent lower than it was for the 2020–21 determination. This decrease is due to a decline in the trade-weighted contract prices[9] primarily reflecting the expected continued entry of a large amount of renewable generation into Queensland and other NEM regions and prevailing lower domestic gas prices to date. The lower domestic gas price is the result of improved supply performance of coal seam gas (CSG) fields in Queensland, decreased demand from gas-fired generation and a decline in international liquefied natural gas (LNG) export prices, among other factors.

We consider that ACIL Allen's methodology has adequately taken into account the potential impacts of covid-19 on the NEM through:

- the use of the Australian Energy Market Operator's (AEMO's) latest demand forecasts from its 2020 Electricity Statement of Opportunities (ESSO) report, in which AEMO incorporated the projected impacts of covid-19
- the incorporation of ASX contract data until 1 May 2021. These contract prices reflect, to date, the market participants' views of the impacts of covid-19, as well as other drivers, on the NEM
- the use of a large number of simulations (i.e. 550 simulations) to estimate wholesale energy costs, which covers a wide range of demand outcomes. These demand outcomes are likely to adequately capture the volume risks[10] that retailers face.

A more detailed explanation of ACIL Allen's wholesale energy costs methodology is available in its 2021–22 report[11] and in Appendix C of our final determination of the 2021–22 notified prices.[12]

Table 2 Wholesale energy costs in regional Queensland, 2021–22 (before energy losses)

Demand profile	*c/kWh*
Ergon NSLP	6.109

Estimates exclude GST.

Source: ACIL Allen, Estimated Energy Costs, final report prepared for the QCA, May 2021.

[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 2021–22.

[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, *Estimated Energy Costs*, final report prepared for the QCA, May 2021.

[12] QCA, *Regulated retail electricity prices 2021–22*—Technical Appendix C, final report, 2021.

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
- 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 2021–22 (Table 3). ACIL Allen has estimated:

- the NEM fees using projected fees in AEMO's final budget and fees for 2020–21[13]
- the ancillary services fees using the average ancillary service payments[14] observed over the preceding 52 weeks.

NEM fees for 2021–22 are estimated to be 0.049 c/kWh, which is 31 per cent lower than it was for the 2020–21 determination. This decrease primarily reflects the decline in costs related to operating the NEM and the exclusion of costs associated with AEMO's function as the National Transmission Planner (NTP).[15]

Ancillary services charges for 2021–22 are estimated to be 0.041 c/kWh, which is 73 per cent lower than the estimates for 2020–21. This decrease is mainly due to:

- the commissioning of additional generation supply, which offers services to this relatively small ancillary service market[16]
- no major power system separation events occurred, such as the events in 2019 and 2020.[17,18]

[13] AEMO, *2020–21 Final Budget and Fees*, June 2020.
[14] AEMO provides data on weekly settlements for ancillary service payments in each interconnected region within the NEM.
[15] The recovery of NTP fees has been transferred recently from AEMO to the transmission network service providers, forming part of the transmission use of system charges.
[16] ACIL Allen, *Estimated Energy Costs*, final report prepared for the QCA, May 2021.
[17] AEMO, *Quarterly Energy Dynamics—Q1 2021*, April 2021.
[18] For the 2020–21 determination, ancillary services fees were higher mainly 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 between South Australia and Victoria.

A more detailed explanation of ACIL Allen's methodology is available in its 2021–22 report.[19]

Table 3 NEM management and ancillary services fees, 2021–22 (before energy losses)

Fees	*c/kWh*
NEM management fees	0.049
Ancillary services fees	0.041
Total	**0.090**

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 2021.

3.1.3 Value of energy losses

One benefit of distributed generation[20], 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 2021–22 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)[21] 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, 2021–22

Item	*Loss factor*
Transmission marginal loss factor (energy-weighted)	0.986
Distribution loss factor	1.077
Total combined loss factor	**1.062**

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 2021.

A total combined loss factor of 1.062 translates to an energy loss of 6.2 per cent. The combined loss factor has increased around 1 per cent compared with the 2020–21 determination, reflecting higher transmission 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 0.384 c/kWh for 2021–22.

[19] ACIL Allen, *Estimated Energy Costs*, final report prepared for the QCA, May 2021.

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

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

APPENDIX A: MINISTERIAL DIRECTION

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

Queensland Government

Our Ref: CTS 24465/20

8 JAN 2021

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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 (the Authority) under section 93 of the *Electricity Act 1994* (the Act) to decide the feed-in tariff (FiT) rate for the 2021–22 tariff year.

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 2021-22 consistent with the methodology used to decide the 2020-21 regional FiT rate of 7.861 cents per kWh. Given that the methodology and approach are unchanged, no public consultation is required in deciding the 2021–22 FiT.

If you need more information or help with this matter, [redacted] Director, Innovative Energy Solutions in my department will be pleased to assist with any questions about the direction and can be contacted on [redacted]

Yours sincerely

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

ELECTRICITY ACT 1994
Section 93

As the Minister for Natural Resources, Mines and Energy, 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 2021-22 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 and 2020-21 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 2021 to 30 June 2022.

Consultation

No public consultation is required to decide the 2021–22 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 11 June 2021.

DATED this 7 day of Jun ~~2020~~ 2021

SIGNED by the Honourable)
Michael de Brenni)
Minister for Energy, Renewables and Hydrogen)
Minister for Public Works and Procurement) *(signature)*

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