INVESTIGATION TO DETERMINE THE REGULATED FEED-IN TARIFF RATE

FINAL REPORT

MAY 2019

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EXECUTIVE SUMMARY

More than 12 per cent of households and small business premises on mainland Tasmania have installed a small-scale electricity generating units such as a solar photovoltaic (PV) system, or solar panels.[1] Eligible customers receive two main benefits from these systems:

- bill savings: using electricity generated onsite to offset electricity that would otherwise be purchased from the their retailer; and
- export tariff (feed-in tariff): payments for every kilowatt hour of electricity exported to the distribution network.

The Tasmanian Economic Regulator (Economic Regulator) is responsible for determining the minimum feed-in tariff rate that retailers are obliged to offer customers with eligible generation systems. The feed-in tariff is a single-rate tariff that is updated by the Economic Regulator each financial year, at the same time as it approves retail electricity prices. The annual updates account for changes in the various cost components that make up the feed-in tariff rate.

On 27 March 2019, the Economic Regulator released its Draft Report. The Draft Report set out the costs and issues the Economic Regulator would take into account when determining the feed-in tariff rate.

This Report outlines the Economic Regulator's determination of the feed-in tariff for the 2019-20 and 2020-21 financial years, and explains each of the decisions made, including the Economic Regulator's responses to stakeholder comments on the Draft Report.

In determining the feed-in tariff rate, the Economic Regulator has used the established 'avoided cost' methodology, which the Economic Regulator has used to calculate feed-in tariffs since 2013. This methodology aims to ensure that customers with solar PV systems receive a return for the electricity they export to the grid which reflects the market value of that energy to retailers.

In general, when a retailer buys electricity from solar PV customers instead of sourcing it from 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
- energy lost transmitting electricity through the transmission and distribution networks.

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1 TasNetworks' *Annual Electricity Distribution Network Performance Report 2017-18.*

For mainland Tasmania, the Economic Regulator has determined that the relevant wholesale electricity cost is the regulated wholesale electricity price, which for 2019-20 has been set by a Wholesale Electricity Price (WEP) order.[2]

Retailers incur other additional costs associated with providing retail electricity services to their customers, including retail operating costs and network costs, regardless of how their electricity is purchased. As these costs are not avoided when retailers purchase electricity exported from solar PV systems, they are not included in the feed-in tariff rate.

The Economic Regulator has calculated the value of electricity exported from solar PV systems as equal to the avoided costs. For 2019-20, the feed-in tariff for mainland Tasmania is provisionally estimated to be around 9.3 cents per kilowatt hour, shown in the table below. The final value will be set by the Economic Regulator in mid-June 2019 when the value of the relevant fees and charges set by the Australian Energy Market Operator have been finalised.

Provisional estimate of single rate feed-in tariff for mainland Tasmania, 2019-20

	Minimum rate to apply (c/kWh)
Feed-in tariff rate	9.347

This rate is around nine per cent higher than the feed-in tariff for 2018-19 of 8.541 cents per kilowatt hour, primarily due to an increase in the wholesale electricity price under the Treasurer's order. The value of avoided energy losses has decreased compared to 2018-19 due to a general decrease in electrical transmission and distribution losses within Tasmania.

In light of the submissions received on introducing a time-varying tariff in Tasmania and the complexity of the issues, the Economic Regulator will seek further information from stakeholders, including electricity businesses in Tasmania, and conduct more detailed analysis before issuing a separate report by the end of 2019.

[2] On 10 May 2019, the Treasurer issued a WEP order for 2019-20, setting the wholesale electricity price at $87.56 per megawatt hour (MWh), equivalent to 8.756 cents per kilowatt hour (kWh).

1 CONTEXT FOR THIS INVESTIGATION

1.1 Feed-in tariffs

A feed-in tariff rate is the rate at which consumers are credited when they export excess electricity generation into the electricity network from their small-scale solar, wind, hydro or biomass fuelled generator. These consumers are not in a position to negotiate a feed-in tariff rate and there is no practical alternative to these exports being purchased by their retailer.

Under section 44E of the *Electricity Supply Industry Act 1995* (ESI Act), retailers operating in Tasmania are required to pay, as a minimum, regulated feed-in tariffs to customers for electricity supplied to the distribution network by qualifying electricity generating systems.

The amount paid to customers per kilowatt hour of electricity exported is based on a feed-in tariff rate, determined by the Economic Regulator, as required under the ESI Act.

A transitional feed-in tariff rate had been established under the ESI Act but this ceased on 1 January 2019, though the relevant customers receive a five cents per kilowatt hour bonus on the regulated feed-in tariff rate until 31 December 2019. Throughout this Report, 'feed-in tariff customers' comprise all customers with qualifying electricity generating systems, including customers that were eligible for the transitional feed-in tariff rate.

1.2 The Economic Regulator's role

The Economic Regulator is an independent statutory body whose role includes promoting efficiency and competition in the electricity supply industry while also protecting the interests of consumers.

A major role of the Economic Regulator is to approve regulated retail electricity prices in accordance with the ESI Act and associated regulations. The ESI Act and the regulations also set out the requirement for the Economic Regulator to determine the feed-in tariff rate and what issues must be considered as part of the investigation and determination process.

Section 44G of the ESI Act requires the Economic Regulator to determine the feed-in tariff rate for feed-in tariff customers on mainland Tasmania.

This Report sets out the basis for the Economic Regulator's determination for the period beginning 1 July 2019 and ending on 30 June 2021 (the determination period). The determination is issued as a separate document by the Economic Regulator.

1.3 Structure of this Final Report

This report outlines the key principles and matters considered by the Economic Regulator in making its feed-in tariff rate determination:

Chapter 2 summarises the decisions made by regulators in other jurisdictions.

Chapter 3 summarises the issues raised in submissions to the Draft Report and the Economic Regulator's response, as well as other matters considered by the Economic Regulator during its investigation.

Chapter 4 explains the Economic Regulator's final decision on the calculation of the feed-in tariff rate.

The Tasmanian Government also asked the Economic Regulator to investigate the merits of introducing a time-varying feed-in tariff in Tasmania and to either report on its findings in the investigation final report or report back, in a separate report, by the end of 2019 (see Attachment B). The Economic Regulator included time-varying tariffs as one of the matters to be considered in this investigation. To allow the Economic Regulator sufficient time to fully consider this issue, the Economic Regulator has decided it will provide a separate report to the Government by the end of 2019.

2 DECISIONS MADE BY REGULATORS IN OTHER JURISDICTIONS

This Chapter provides an overview of decisions made recently by regulators in other jurisdictions with respect to calculating the value of energy exported to the grid by customers with solar PV systems.

Australian state and territory regulators use the net financial benefit to retailers approach (avoided cost method) to determine the feed-in tariff rate.

Under this approach, changes in retailers' costs and revenues arising from supply into the grid from distributed generation and the on-selling of this electricity by retailers are calculated taking into account the following:

- forgone wholesale electricity purchases – since retailers are selling some electricity purchased from owners of distributed generation instead of from large scale generators;
- savings in NEM market and ancillary fees – because these are levied on retailers' net purchases through the NEM as measured by the Australian Energy Market Operator (AEMO) and retailers do not purchase distributed generation through the NEM; and
- electricity network energy losses – these tend to be low as electricity supply from distributed generation to other customers generally involves low levels of losses compared to electricity transported over long distances.

2.1 New South Wales

In New South Wales, while electricity retailers are not obliged to offer customers a feed-in tariff for their solar exports, many do. To help retailers and customers decide whether market offers in relation to feed-in tariffs are reasonable, the Independent Pricing and Regulatory Tribunal of NSW (IPART) has set a 'benchmark range' for solar feed-in tariffs for each year since 2012.

In 2018, the NSW Government asked IPART to continue setting benchmarks for solar feed-in tariffs annually for the three financial years from 2018-19 to 2020-21. IPART was also asked to set time-dependent benchmark ranges for solar feed-in tariffs.

IPART has applied the wholesale market method to determine its 'all-day solar' and 'time-dependent' feed-in tariff benchmarks. For 2018-19, IPART set a benchmark range of 6.9 to 8.4 cents per kWh for 'all-day solar' exports, based on a forecast of the average price retailers would pay for solar exports across the day (weighted by solar output) as if they were buying the energy on the wholesale market.[3]

[3] IPART, *Solar feed-in tariffs, the value of electricity from small-scale solar panels in 2018-19, Final Report,* June 2018.

The all-day feed-in tariff rate is calculated according to the following formula:

(Average forward price (ASX baseload price) x solar multiplier x network loss factor) + NEM fees and charges.

The average wholesale electricity price is forecast using NSW baseload electricity futures contracts traded on the Australian Stock Exchange (ASX) averaging the daily close price over 40 days, including some adjustments to this range to accounts for forecasting uncertainty. The solar multiplier is marginally less than one (0.99) for the 2018-19 benchmark, reflecting the fact that average wholesale prices are likely to be lower at the time of day when solar is exported to the grid.

2018-19 benchmark range for 'time-dependent solar' exports is between 6.5 to 7.9 cents per kWh for the offpeak period from 6 am to 3 pm and between 7.4 and 17.2 cents per kWh at other times, varying by the time block. However, IPART noted that over 90 per cent of solar exports would occur in the lowest price time block (from 6.30 am to 3.30 pm).

2.2 Queensland

Feed-in tariff arrangements in Queensland vary between South East Queensland (SEQ) and regional Queensland. In SEQ, individual retailers determine the value of the feed-in tariff paid to solar PV customers as part of their competitive market offers.[4] In regional Queensland, where there is limited competition, the Queensland Competition Authority (QCA) sets the feed-in tariff rate.

Queensland's Solar Bonus Scheme (SBS) pays eligible customers a prescribed feed-in tariff for surplus electricity generated from small-scale solar PV systems and exported to the grid. The SBS was closed to new customers on 30 June 2014 and replaced with a mandatory feed-in tariff for regional Queensland,[5] determined by the QCA each financial year in a Direction from the Minister for Energy, Biofuels and Water Supply (the Minister).

The QCA applies the direct financial benefit to retailer method for estimating a fair and reasonable feed-in tariff rate and, for 2017-18, estimated a feed-in tariff rate of 10.102 cents per kilowatt hour.[6]

On 22 January 2018 the QCA received a Direction from the Minister to set the feed-in tariff rate for regional Queensland for 2018-19, using the same methodology as for 2017-18. On the same day, the Minister directed the QCA to provide advice on a time-varying solar feed-in tariff for regional Queensland for 2018-19. The QCA advised the Minister that time-varying solar pricing should incorporate the wholesale electricity spot price values for defined peak and off-peak periods, consistent with the advice it provided for 2017-18.

In 2018-19, the feed-in tariff rate for regional Queensland decreased by seven per cent, to 9.369 cents per kilowatt hour, primarily due to a reduction in wholesale energy prices.

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4 Queensland Productivity Commission, *Solar feed-in pricing in Queensland - Final Report*, June 2016.

5 The QCA is not required to determine a feed-in tariff rate to apply to customers in South-East Queensland in recognition of the competition that exists between retailers operating in that market.

6 QCA, *Solar feed-in tariff for regional Queensland,* Final Report, May 2017.

2.3 Victoria

Under section 40FBB of the *Electricity Industry Act 2000* (Vic), the Essential Services Commission (ESC) is required to determine one or more feed-in tariff rates that electricity retailers must pay their customers for the electricity they export to the grid, whether the generation facility uses wind, solar, hydro or biomass.

In making its determination, the ESC is required to take the following factors into account:

- prices of electricity in the wholesale electricity market; and
- any distribution and transmission energy losses avoided in Victoria by the supply of small renewable energy generation electricity.

Following an inquiry conducted by the ESC in 2016 on the value of distributed generation, legislation was amended in 2017 to allow the ESC to set time-varying feed-in tariffs using a wholesale market method to set the underlying feed-in tariff rate. In 2017, the Victorian Government also issued an Order in Council specifying a method for determining the social cost of carbon, which is added to the singe-rate and time-varying feed-in tariff rates.

The minimum feed-in tariff rates to apply in Victoria from July 2018 have been calculated by the ESC using the formula:

(Average wholesale electricity pool price + avoided market fees and ancillary service charges) x network losses + value of avoided social cost of carbon

The ESC's most recent decision sets out a single-rate feed-in tariff for 2019-20 of 12 cents per kilowatt hour and time-varying feed-in tariff with off-peak, shoulder and peak rates of 9.9, 11.6 and 14.6 cents per kilowatt hour respectively.[7] Retailers are required to offer either a single-rate feed-in tariff or time-varying feed-in tariff rates. All rates include 2.5 cents per kilowatt hour for the avoided "social cost of carbon".

2.4 South Australia

Under section 25 of the *Essential Services Commission Act 2002* (SA) the Essential Services Commission of South Australia (ESCOSA) may make pricing determinations. Further, in accordance with section 35A(1)(ba) of the *Electricity Act 1996* (SA), ESCOSA may determine feed-in tariffs in relation to electricity fed into a distribution network having regard to the fair and reasonable value to a retailer of electricity fed into the grid (section 35A(2a) of that Act).

In 2016, ESCOSA announced its decision to no longer set a minimum amount for the South Australian retailer-paid feed-in tariff (R-feed-in tariff) scheme, from 1 January 2017. Instead, each electricity retailer is required to determine the R-feed-in tariff amount and structures it will pay to its solar customers for electricity fed into the distribution network. Retailers are required to demonstrate publicly how their offers provide benefits to solar customers.[8]

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7 ESC, Minimum electricity feed-in tariffs to apply from 1 July 2019, Final decision, 28 February 2019.

8 ESCOSA, *Retailer feed-in tariff - Review of regulatory arrangements - final decision*, December 2016.

ESCOSA states that it will continue to monitor retailers' offers to solar customers in order to determine whether or not it is appropriate to set a minimum R-feed-in tariff amount in the future.

Market offers by electricity retailers in South Australia include feed-in tariff rates for small customers of 11 cents per kilowatt hour (Origin), 6.8 cents per kWh (Alinta) and 16.3 cents per kilowatt hour (AGL).

2.5 Western Australia

Feed-in tariffs under the Western Australian Renewable Energy Buyback Scheme (REBS) pay for excess electricity generated by small-scale solar photovoltaic (PV) or wind power systems. Under Western Australia's *Electricity Industry (Licensing Conditions) Regulations 2005*, government-owned retailers (Synergy and Horizon Power) must offer eligible customers a buyback scheme.

According to requirements, the retailers establish their own terms and conditions (including rates) for buying excess energy and are responsible for running the Renewable Energy Buyback Scheme (REBS). The Public Utilities Office approves the terms and conditions of each retailer's buyback offer (an approved contract). In assessing whether the contracts, including the buyback rate, are 'fair and reasonable', it considers:

- the wholesale cost of electricity for the retailer;
- line-loss reductions provided by distributed renewable energy;
- peak reductions provided by distributed renewable energy;
- capacity benefits provided by renewable energy; and
- the costs to retailers in running REBS.

The regulations do not oblige the Coordinator of Energy to consider any particular information with respect to determining what is 'fair and reasonable'. However, consistent with the national principles for feed-in tariff schemes, the Coordinator of Energy does consider the value to retailers of the energy received from customers. Tt also consider other factors, such as any additional costs incurred by retailers, where appropriate.

The 2018-19 REBS buyback rate for customers on the South West Interconnected System (SWIS) distribution network was 7.1350c/kWh. In regional areas outside of the SWIS area, Horizon Power provides buyback rates that vary depending on where the system is installed. Horizon Power's website notes it is unable to connect any more renewable energy systems in some towns where the town has reached its technical limitations. In some cases, only installations with generation management (where output can be controlled) are able to connect.

3 SUBMISSIONS ON THE DRAFT REPORT

The Draft Report was released for consultation on 27 March 2019. Submissions were due by 30 April 2019.

Three submissions were received in response to the Draft Report. Specific feedback fell into the following broad categories:

- the calculation method used;
- the tariff structure (ie a time-varying feed-in tariff rate);
- the metering anomaly;
- matters outside the scope of this investigation, including:
    - solar PV policy;
    - mechanisms to support distributed generation; and
    - eligibility requirements.

This Chapter describes stakeholder feedback on these issues together with the Economic Regulator's responses.

3.1 Method used

Stakeholders put forward their views on the following issues relating to the method used to calculate the feed-in tariff rate:

- wholesale energy costs;
- energy losses;
- NEM management and ancillary services fees;
- network costs; and
- other indirect costs and benefits.

3.1.1 Wholesale energy costs

In the Draft Report, the Economic Regulator proposed the use of the regulated wholesale price method to calculate the wholesale energy cost component of the feed-in tariff rate. Under this approach, the wholesale price used to determine the wholesale electricity cost component of standard offer retail prices by the relevant retailer is used for feed-in tariff rate determination purposes.

The Economic Regulator applied this method in its 2013 and 2016 feed-in tariff rate determinations and proposed using it again in its 2019 feed-in tariff determination, noting that

if a WEP order[9] is in effect for the relevant pricing period, the WEP order price would be used instead.

The Tasmanian Renewable Energy Alliance (TREA) stated that the wholesale price should reflect the total benefit to Tasmania, not just the savings to retailers. TREA submitted that, at a minimum, the wholesale price should be the Tasmanian wholesale price approved by the Regulator under s40AB(3A) of the ESI Act, which is the estimate of the wholesale price to be used in determining standing offer prices offered by Aurora Energy to small customers if a WEP order is not in place.

The TREA submission also stated that, ideally, an export-weighted wholesale price, based on the average price for exported electricity via Basslink, should be used to determine the wholesale price component.

Aurora Energy's submission supported the Economic Regulator's proposal to apply of the regulated wholesale price method, noting that:

- it is important that the feed-in tariff rate reflects the wholesale value of the energy; and
- this approach will ensure that the costs incurred in purchasing exported excess solar generation is consistent with a retailer's ability to recover costs from customers through standing offer tariffs.

The Economic Regulator's view is that the wholesale electricity price used in the calculation of the feed-in tariff should reflect the prices any retailer in Tasmania would avoid paying for wholesale electricity purchases, taking into account the prevailing regulatory requirements for wholesale pricing in place at the time.

A WEP order, once issued, applies to the sale of electricity under standard retail contracts. Hydro Tasmania has been issued a Ministerial Direction to perform a community service obligation in accordance with section 65(1) of the *Government Business Enterprises Act 1995*. Under this Direction, Hydro Tasmania must offer to retailers contracts at the WEP order price for their small customer load during the 2019-20 financial year.

The Economic Regulator acknowledges TREA's point that the wholesale electricity price set by the Treasurer under a WEP order is a mechanism by which the Government seeks to constrain regulated retail price increases for small customers. However, if the wholesale price component of the feed-in tariff were set by reference to a higher price, which is the effect of the proposals from TREA, this would be a higher price that the Regulator has included in approving standing offer prices, resulting in a lower, or potentially negative, retail margin for the regulated offer retailer (Aurora Energy).

It would also result in a higher price than Aurora Energy and other retailers would pay for electricity from Hydro Tasmania, given the Ministerial Direction referred to above.

The Economic Regulator's final decision on the wholesale energy cost component is to maintain its previous approach of using the regulated wholesale electricity price, which is the price set by the Treasurer in a WEP order or, if no order is in place, the price determined by

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9 Section 40ABA of the ESI Act allows the Treasurer to issue an order to declare a wholesale electricity price (WEP) which is taken into account in the wholesale electricity cost component of standing offer prices.

the Economic Regulator under s40AB(3A) of the ESI Act and set out in the 2019 Standing Offer Price Approval Guideline.[10]

3.1.2 Energy losses

When electricity is purchased from distributed generation systems, it reduces the amount of electricity transported over long distances. Costs associated with network losses when electricity is purchased through the NEM are, therefore, also reduced.

To account for the fact that retailers avoid purchasing both their customer's consumed electricity and the additional amount that would have been lost transporting it to these customers, it is appropriate that the wholesale electricity price is adjusted upwards for line losses when determining the feed-in tariff rate.

Submissions supported the inclusion of network losses (the Distribution Loss Factor (DLF) and the Marginal Loss Factor (MLF)) in setting the feed-in tariff rate. The Economic Regulator's final decision is to adjust the wholesale electricity price for line losses when calculating the feed-in tariff rate.

3.1.3 NEM management and ancillary services fees

Retailers pay NEM management fees and ancillary services charges to AEMO. Some of these fees and charges are based on the amount of wholesale electricity they purchase through the NEM. As the amount of wholesale electricity purchased through the NEM is reduced by exports from distributed generation, retailers' liability for these market fees and ancillary service fees is also reduced as they are calculated on a lower volume of wholesale electricity.

Submissions supported the continued inclusion of NEM management and ancillary service fees in calculating the feed-in tariff rate. The Economic Regulator has therefore included those NEM management and ancillary services fees that vary with amount of wholesale electricity purchased in the determination of the feed-in tariff rate.

3.1.4 Network costs

Network costs comprise two components: transmission and distribution charges. These network costs (including metering) are a major component of retailers' costs to supply electricity to their customers.

Conceptually, network costs can be avoided through the supply of electricity from distributed generation as less electricity is purchased from large scale generators and consequently less electricity is delivered through the transmission network to customers.

TREA submitted that the feed-in tariff rate should take into account avoided losses from transmitting electricity over long distances via the transmission network. TREA argued that, for the proportion of their energy that comes from distributed generation, customers are paying for a service that is not provided.

State regulators across Australia have not supported any form of payment for avoided transmission costs as part of solar feed-in tariff arrangements. This is because there is no clear

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10 Tasmanian Economic Regulator, *2019 Standing Offer Price Approval Guideline*, 28 March 2019.

evidence that, system-wide, transmission network costs are lower as a result of electricity supply from distributed generation.

Furthermore, as discussed in the Draft Report, if retailers were to pay an additional amount for exports to reflect any network cost savings, this would represent a net revenue loss to the retailer. This is because the network costs retailers pay to TasNetworks are not any lower as TasNetworks' charges are generally based on the amount of metered consumption at a customer's property, regardless of the source of that electricity.

If there were network cost savings from increased electricity supply from increased distributed energy (whether as a result of increased exports or greater energy consumption by customers from their own electricity generation), this would be reflected in the revenue and pricing decisions of the Australian Energy Regulator in its regulation of network businesses. However, the recent AER Transmission and Distribution Determination for TasNetworks did not include any discussion of potential network benefits from increased distributed energy generation or any mechanism for TasNetworks to set lower network charges associated with increased consumption or exports of distributed energy. By contrast, the AER approved additional capital expenditure to enable TasNetworks to better adapt to increased distributed energy generation within the distribution network.[11]

The Economic Regulator has therefore determined that electricity exports from distributed generation systems do not result in lower transmission and distribution charges for retailers than if the electricity were purchased through the NEM. These costs are, therefore, not avoidable costs to retailers and will not be taken into account when determining the feed-in tariff rate.

3.2 Direct impacts considered

In its Draft Report, the Economic Regulator also considered whether other direct impacts should be included in the feed-in tariff rate calculation.

The direct impacts considered included:

- Renewable Energy Target (RET) costs;
- retail operating costs; and
- business risk costs (retail margin).

3.2.1 Renewable Energy Target costs

The Australian Government's Renewable Energy Target (RET) scheme creates a guaranteed market for renewable energy, using a mechanism of tradable certificates with each certificate representing one megawatt hour of renewable electricity generated.

The RET comprises two separate schemes: the Large Renewable Energy Target (LRET) and the Small-Scale Renewable Energy Scheme (SRES).

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[11] Australian Energy Regulator, *TasNetworks 2019-24 Transmission and Distribution Determination, Final Decision,* April 2019.

The LRET supports development of large scale wind and solar projects. Electricity retailers must purchase and surrender a set number of Large-scale Generation Certificates (LGCs) each year. The number of LGCs to be surrendered each calendar year is calculated using the Renewable Power Percentage (RPP) which is determined by the Clean Energy Regulator (CER).

The SRES supports investment in smaller technologies such as rooftop solar panels, solar hot water heaters and small-scale wind systems through the generation of Small-scale Technology Certificates (STCs). The SRES is an uncapped scheme such that all STCs created must be purchased by electricity retailers. The number of STCs electricity retailers must purchase and surrender over the course of each calendar year is calculated using the Small-scale Technology Percentage (STP) determined by the CER.

From 2017, the deeming period for small-scale solar systems was reduced to 14 years and will continue to decline by one year, every year until the scheme ends in 2030.

The RPP and STP are applied to the amount of wholesale electricity purchased by the retailer in a calendar year adjusted for the applicable distribution loss factors.

Wholesale purchasers of electricity who are liable under the RET (generally retailers) are required to purchase and surrender certificates in accordance with the RET, in proportion to their total electrical purchases.

In June 2015, the Australian Government set a new 2020 target for large-scale generation of 33 000 GWh. The target stays the same from 2020 to 2030 and new renewable energy power stations can continue to be accredited under LRET until 2030.[12] Electricity consumers pay for this Australian Government requirement through obligations imposed on retailers, as wholesale electricity purchasers, which then pass through the costs of these obligations to their customers.

As RET costs are calculated on the amount of electricity purchased each year by a retailer, whether from roof top solar PV systems, other distributed generation systems or from large scale generators through the NEM, retailers are unable to avoid RET costs.

The NSW regulator, IPART, noted that it would not be appropriate to provide feed-in tariff customers with a premium on the feed-in tariff rate (as compensation for the value of the renewable energy generated) as feed-in tariff customers already received the benefit of offsetting the value of the renewable energy certificates against the installation costs of solar PV system.[13]

The Queensland Productivity Commission made a similar comment in its recommendation on feed-in tariffs, noting that investors already receive a subsidy from the SRES for emissions reduction and any additional subsidy paid through a feed-in tariff would be poorly targeted and result in a high cost of abatements, as well as large cross-subsidies between electricity consumers.[14]

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12 http://www.cleanenergyregulator.gov.au/RET/About-the-Renewable-Energy-Target (accessed 21 January 2019).

13 IPART, *Solar feed-in tariffs - The value of electricity from small-scale solar panels in 2018-19, Draft Report,* May 2018.

14 QPC, *Solar feed-in pricing in Queensland, Final Report*, June 2016.

The Economic Regulator has not taken RET costs into account when determining the feed-in tariff as these costs are unavoidable to the retailer. This is consistent with the findings of other regulators and the advice provided by the CER as part of the feed-in tariff reviews conducted in other jurisdictions.[15]

3.2.2 Retail operating costs

Retail operating costs are those costs incurred in running a retail electricity business. These include:

- costs associated with billing and revenue collection;
- call centre costs;
- customer information costs;
- corporate overhead costs;
- regulatory compliance costs; and
- marketing costs.

These costs tend to vary in proportion to the number of customers and not, directly, the volume of electricity sold. Furthermore, they are not lower if retailers' customers are supplied with electricity from distributed generation rather than from large-scale generation purchased through the NEM.

Regulators in other jurisdictions have examined whether retailers' operating costs for serving solar PV system customers would be higher than the cost of serving other customers. They have found that while different customers incurred different retail costs, there was insufficient evidence to suggest solar PV customers were more expensive to serve than non-solar PV system customers. IPART also considered that the cost to serve in respect to solar PV system customers would likely fall over time as these customers became more familiar with their solar PV systems and concluded that there could be cost savings in terms of reduced bad debt risks associated with solar PV customers due to the relatively lower bills received by those customers.[16]

Frontier Economics in a more recent study also found no clear evidence that the costs of arranging retail supply are affected by solar PV exports.[17] Both IPART and the QCA made similar remarks in their recent feed-in tariff reports, noting that retailers still incur operating

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15 See IPART, *Solar feed-in tariffs, Setting a fair and reasonable value for electricity generated by small scale solar PV units in NSW*, *Final Report* (2012), page 53, ESCOSA, *2012 Determination of solar feed-in-tariff premium, Final Price Determination* (2012), page 42 and QCA, *Estimating a fair and reasonable solar feed-in-tariff for Queen*sland (2013), pages 23 and 24.

16 See IPART, Solar feed-in tariffs, Setting a fair and reasonable value for electricity generated by small scale solar PV units in NSW, Final Report (2012), page 51, ESCOSA, 2012 Determination of solar feed-in-tariff premium, Final Price Determination (2012), pages 43 and 44 and QCA, Estimating a fair and reasonable solar feed-in-tariff for Queensland (2013), pages 27 and 28.

17 Frontier Economics, *2018 Solar Feed-in Tariff Review – A Final Report prepared for IPART*, March 2018.

costs when they supply electricity services to customers, regardless of where and how the electricity was generated.[18,19]

The Economic Regulator agrees with these views and has not included retail operating costs in the calculation of the feed-in tariff rate.

3.2.3 Business risk costs (retail margin)

Retailers assume business risks in providing electricity retail services and are therefore entitled to receive a return on their investment in the business. The retail margin is intended to compensate investors for committing capital to a business and for accepting the range of commercial risks they face. In relation to regulated standing offer prices, it is a percentage applied to the sum of the retailer's costs as reviewed and approved by the Economic Regulator.

A retailer's business risks are not reduced by the sale of electricity sourced from distributed generation rather than through the NEM. As there is no reduction in the business risks faced by retailers, it is not appropriate for any component of the retail margin to be provided to customers with distributed generation. This is the same conclusion reached by regulators in other jurisdictions.[20]

None of the submissions disagreed with the Economic Regulator's Draft Report proposal to exclude these direct impacts.

The Economic Regulator has therefore maintained its draft position and excluded these direct impacts from the feed-in tariff rate calculation.

3.3 Indirect impacts considered

In its Draft Report, the Economic Regulator also considered a whether indirect impacts should be included in the feed-in tariff rate calculation.

The indirect impacts considered included:

- reductions in average network loss factors as a result of increased distributed generation;
- the impact on wholesale electricity prices of increased distributed generation;
- the deferral of network augmentation costs;
- the potential need for network reinforcement costs;
- the environmental benefits of solar PV; and
- security of supply.

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18 IPART, *Solar feed-in tariffs, The value of electricity from small-scale solar panels in 2018-19*, Final Report, June 2018.

19 QCA, Determination 2018–19 Solar feed-in tariff, May 2018.

20 See IPART, *Solar feed-in tariffs, The value of electricity from small-scale solar panels in 2018-19*, Final Report, June 2018 and QCA, *Estimating a fair and reasonable solar feed-in-tariff for Queensland* (2013), page 28.

3.3.1 Average network loss factors

As discussed in Section 3.1.2, given that electricity exported from distributed generation reduces the need to transport electricity over long distances, the energy losses that normally occur when electricity is transported across the transmission and distribution network are reduced. The Economic Regulator has included these specific energy losses as a direct financial impact for retailers when determining the feed-in tariff rate.

However, all other Tasmanian electricity users may derive an indirect benefit through a reduction in the average network loss factors. The more electricity produced and used from distributed generation (whether it is used directly by the system owners or exported to the grid), the less electricity is purchased from large-scale generators across the NEM. This means that less electricity is transported across the transmission and distribution networks resulting in lower average network loss factors. Lower loss factors mean lower costs and prices for all customers when loss factors are updated annually.

Similar to other jurisdictions, network loss factors are averaged across an entire customer class within the low voltage network of the distribution system. As noted by regulators in other jurisdictions, this means that any financial benefits associated with a reduction in loss factors due to PV exports will be shared equally among all customers within that tariff class.[21]

It is unclear as to the extent to which losses within the network may change with increased use of distributed generation systems. More importantly, if all customers do benefit from lower tariffs and a payment to reflect the benefit is included in the feed-in tariff rate, the benefits are effectively provided twice, at the expense of the retailers.

Given this, Economic Regulator considers that any reduction in costs due to lower average network loss factors should not be included in determining the feed-in tariff rate. This is consistent with decisions of regulators in other Australian jurisdictions.

3.3.2 Impact on wholesale electricity prices

In the wholesale market, generators offer to supply electricity at designated prices every five minutes of every day. AEMO stacks these bids from lowest to highest (a merit order), with the aim of meeting prevailing demand in the market in the most cost effective way. Distributed generation reduces the total supply required from the wholesale market. This means that the generation market can be settled at a lower bid in the merit order thereby lowering spot prices (the merit order effect). Retailers, and subsequently customers, receive the benefits of lower wholesale electricity prices.

Regulators in other jurisdictions have also considered the benefit that distributed generation can provide in lowering the wholesale spot price for electricity.

The lower spot price is a normal part of the competitive market process which occurs when the supply of a good or service increases. As noted by IPART:

> …any new source of generation in the wholesale electricity market may contribute to a reduction in wholesale spot prices. However the generator who contributes to this price reduction does not receive any payment to reflect a wider market benefit. Likewise, a

[21] See IPART, *Solar feed-in tariffs, setting a fair and reasonable value for electricity generated by small scale solar PV units in NSW, Final Report* (2012), page 78.

> customer who consumes electricity by switching on an appliance and thereby increasing the market demand for electricity and electricity prices for all customers is not required to compensate the other customers for these higher prices. These are just normal outcomes of a competitive market.[22]

The Queensland Productivity Commission agreed with this view and also noted that paying solar PV customers for any reduction in wholesale market prices would likely result in overall higher electricity prices for all consumers:

> Solar PV owners should not be paid for any impact on wholesale prices. Governments do not reward generators for reducing the wholesale price, just as suppliers in other markets are not paid for increasing supply. [23]

Distributed generation during the day in Tasmania can allow Hydro Tasmania to build up its storages to generate energy at later times or export to Victoria when prices are high. This may result in lower wholesale electricity prices in Tasmania overall (provided there are no water storage supply issues), though the price impacts are unclear. The relatively small scale of distributed generation, compared to the total amount of electricity generated in Tasmania[24], suggests that it is unlikely to have a measureable impact on wholesale electricity prices.

More importantly, if customers benefit from lower wholesale electricity prices and a payment to reflect the benefit is returned to PV customers, the benefits are effectively provided twice, at the expense of the retailer.

It is also important to note that the Treasurer has set the Tasmanian wholesale electricity price for 2019-20, as set out in Section 3.1.1, which does not necessarily reflect underlying wholesale market trends in Tasmania.

The Economic Regulator has therefore not taken into account the impact of distributed generation on the wholesale spot price from the merit order effect or on Hydro Tasmania's storages when determining the feed-in tariff rate.

3.3.3 Potential deferral of network augmentation costs

The increased uptake of distributed generation may potentially lead to a reduction in future network costs depending on the specific location, level of penetration and local load characteristics. As demand for electricity increases, the capacity of the network must also increase, particularly the transmission system if the additional supply is sourced from new large-scale generating plants.

As exports from distributed generation usually do not use the transmission network or require electricity to travel long distances along the distribution network, some of this investment could potentially be deferred which avoids additional network costs for all customers.

However, analysis of network data in other jurisdictions has not identified any material network savings from solar PV. In Queensland, the QPC found that while solar PV may be able

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22 IPART *Solar feed-in tariffs, The value of electricity from small-scale solar panels in 2018-19, Final Report*, June 2018.

23 QPC, *Solar feed-in pricing in Queensland, Final Report*, June 2016.

24 In 2017-18, distributed generation exported around 93 GWhs of electricity to the grid. Total Tasmanian demand in the same period was 10 909 GWhs.

to defer network expenditure in some specific locations, any savings that may arise are unlikely to outweigh the additional costs incurred from integrating solar PV into the network.[25] In examining the coincidence of solar generation and maximum peak demand, it found that for a large number of Queensland zone substations, where peak demand occurs after 6pm, at the time of the peak, the load profile on the substation with and without distributed generation was the same. It concluded that the installation of additional solar provides no benefit in terms of peak reduction.

The ESC, in a recent inquiry into the value of distributed generation to electricity networks, made similar observations, noting that while there was some evidence of distributed generation creating network benefits, those benefits at present are relatively modest.[26] It also concluded that due to the variability of the potential value of distributed generation on the network, across both location and time, a broad-based feed-in tariff would be an unsuitable tool for remunerating network value.

There may be several other reasons why a network extension or augmentation may not occur. This may include, for example:

- investment in energy efficient technology by some customers reducing overall demand;
- changes in economic conditions; and
- government policy changes with regards to network standards.

Under these circumstances, no individual party is compensated for their potential contribution towards avoided network investment. All parties benefit from the avoided network expenditure, similar to how all parties benefit from reduced average loss factors and wholesale electricity prices through the merit order effect as discussed in Section 5.3.

Additionally, networks are built with the capacity to supply customers at peak demand times, which are typically during the early morning in Tasmania during the winter period. However, as solar energy is generated only during daylight hours and peaks during the summer months, it does not make any significant contribution to meeting peak demand. Consequently, networks still need to be built to meet peak demand and operated regardless of whether or not solar energy is generated. As such, there would not appear to be any deferred network augmentation costs avoided due to the connection of solar PV installations to the network.[27]

This is consistent with conclusions reached by regulators in other jurisdictions that suggest that potential benefits from deferred network investment are either small or difficult to measure.[28] Studies have also shown that even in areas of the network in which solar PV exports do occur at times of peak demand, it does not necessarily reduce network costs.

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25 Queensland Productivity Commission, *Solar feed-in pricing in Queensland - Final Report*, June 2016.

26 ESC, *The network value of distributed generation, Inquiry Stage 2 Final Report*, February 2017.

27 See TasNetworks' *Annual Planning Report 2018* (page 49).

28 See for example, IPART, *Solar feed-in tariffs -The value of electricity from small-scale solar panels in 2018-19, Draft Report,* May 2018.

Frontier Economics[29] noted:

> The reason is that many parts of the transmission system and distribution network have ample spare capacity, so that even if solar PV exports do contribute to reducing peak demand this may not result in any material cost saving from avoided or deferred investment.

When this issue was considered by the Australian Energy Market Commission (AEMC) in 2016, it found that even in areas where there was projected network congestion, payments to embedded generators (such as solar) can increase costs to consumers while offering little or no deferral of network investment.[30]

Again, including the value of these potential benefits in the feed-in tariff rate paid to customers with distributed generation would double count the benefits at the expense of the retailer.

TREA's submission acknowledged that due to the variation of potential benefits in terms of location and time, any reduction in distribution network costs attributed to distributed generation is more effectively compensated through a mechanism such as network support payments, rather than the feed-in tariff rate.

The Economic Regulator considers that all benefits of avoided network investment should accrue to all parties and has not taken this factor into account when determining the feed-in tariff rate.

3.3.4 Potential need for network reinforcement costs

Increased installation of distributed generation has the potential to add additional costs and risks to the operation of electricity networks. This is particularly the case for intermittent distributed generation systems such as solar PV.

The Productivity Commission's 2013 Report[31] found the massive growth in residential PV installations since 2009 is imposing added costs for some networks. It noted that the AEMC has found that issues related to voltage rise and harmonic imbalances are a concern for the network where high concentrations of PV installations occur. Distribution network operators have made similar submissions, noting that the high level of solar PV on parts of the grid is causing issues of network stability and voltage control. Ergon Energy's submission to the Productivity Commission's report noted:

> Networks have not been designed to handle large export power flows at the distribution level … In Ergon Energy's experience, high penetration levels of distributed generation have resulted in additional network augmentation costs. (sub. DR63, p. 8).

These issues for the network arise because solar energy is not able to respond, with reasonable certainty, to the ongoing needs of the power system. As an example, solar energy cannot be relied upon to assist with the control of frequency deviations within the power system. Furthermore, because most solar inverters have been designed to disconnect themselves from the network if power system frequency does not meet a pre-defined

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29 Frontier Economics, *2018 Solar Feed-in Tariff Review – A Final Report prepared for IPART*, March 2018

30 AEMC, *Local Generation Network Credits, Final Rule Determination*, December 2016,

31 Productivity Commission Inquiry Report Volume 2, *Electricity Network Regulatory Frameworks*, April 2013.

operating band, there is the potential for many inverters to simultaneously disconnect from the system. A large volume of solar electricity may, therefore, stop being generated and exported to the grid with little warning, which may worsen the effects of any initial system frequency deviation. This adds risks to the network in terms of maintaining a continuous stable flow of electricity to customers.[32]

In a report for IPART, Frontier Economics found that solar exports may impose additional costs on the distribution network, such as investment to support bi-directional flows of electricity to handle the volume of solar exports.[33]

In Queensland, the QPC noted in its 2016 Solar feed-in tariff Pricing Report that increasing solar penetration is driving network issues that require additional operating expenditure, and, in some cases, capital investment.[34] It noted that approved expenditure directly related to solar PV over the regulatory period amounted to more than $73 million ($2014-15).

However, while this is the case, it is important to note that frequency control issues can potentially arise due to the connection of other generation sources including traditional synchronous generators, wind farms and HVDC (High Voltage Direct Current) interconnectors such as Basslink.

Frequency issues are currently managed by AEMO. AEMO is responsible, under the National Electricity Rules (NER), for ensuring that the power system is operated in a safe, secure and reliable manner. In order to fulfil this obligation, AEMO controls key technical characteristics of the power system such as frequency, voltage and system restart services through ancillary service markets. The NER provides AEMO with mechanisms to purchase required services and recover a proportion of the costs from retailers according to a set of recovery rules. The increased installation of solar PV systems therefore has the potential to increase some ancillary fees which would be passed on to all customers.

At present, it is difficult to predict when system frequency issues may arise due to the export of electricity from distributed generation, especially from solar PV systems. The precise nature of the risks and any resultant costs to rectify identified issues, are therefore matters for future consideration. This is an ongoing issue which is being investigated not only in Tasmania, but in other mainland jurisdictions. It is relevant to note that the mainland regions of the NEM have, in aggregate, solar PV system capacities that are now comparable with installed wind generation capacity.

The Economic Regulator considers this to be a system-wide issue, in which roof top solar PV systems play an increasing role. Given this, the Economic Regulator considers this issue is best considered at a system-wide level rather than being incorporated in a feed-in tariff for rooftop solar PV owners.

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32 In, early 2015-16, Standards Australia undertook consultation on proposed revised minimum performance and safety standards for the design, construction and operation of inverters intended for use in inverter energy systems used for the injection of electric power through an electrical installation connected to the electricity distribution network. The proposed replacement standards are AS/NZS 4777.1 Grid connection of energy systems via inverters - installation requirements and AS/NZS 4777.2 Grid connection of energy systems via inverters - inverter requirements.

33 Frontier Economics, *2018 Solar Feed-in Tariff Review – A Final Report prepared for IPART*, March 2018

34 Queensland Productivity Commission, *Solar feed-in pricing in Queensland - Final Report*, June 2016.

Furthermore, similar to the points made above, including a value for potential network reinforcement costs in the determination of the feed-in tariff rate (which would reduce the rate) would be double counting the cost at the expense of customers with distributed generation.

3.3.5 Environmental and health benefits

There are a number of environmental benefits associated with using solar generation compared to traditional forms of power generation such as coal power. These include reduced carbon emissions and reduced dependence on fossil fuels. It has been argued that the feed-in tariff should act as a mechanism for promoting increased solar PV installations due to the associated environmental benefits.

TREA submitted that a 'fair' feed-in tariff should take into account the reduced greenhouse gas emissions resulting from solar PV's role in reducing imports from Victoria. It argued that an 'avoided social cost of carbon', similar to the allowance determined by the Victorian ESC, should be applied to the feed-in tariff rate in Tasmania. TREA also argued that the health benefits of displaced coal fired electricity should also be included in the value applied to the value of electricity exported from small-scale distributed generation.

However, under the 'net financial benefits to retailers' method of determining the feed-in tariff rate, these benefits (if they are able to be quantified) should not be included as the retailers cannot recover the value of the payments made (unless there is a direct Government subsidy).

Furthermore, given the value of the certificates provided through SRES, solar PV customers already receive financial compensation for emissions abatements and other environmental benefits provided by solar PV installations.[35] Given any potential health benefits would be an outcome of reduced greenhouse gas emissions, the compensation provided to solar PV customers through SRES already includes an inherent value for health benefits.

Given this, the Economic Regulator has maintained its draft position and not included an estimate of the value of additional potential environmental benefits in the calculation of the feed-in tariff rate.

3.3.6 Security of supply

Additional generation from distributed energy resources such as solar PV reduces reliance on Tasmania's hydro generation by displacing the potential energy of water in Hydro Tasmania's storages. This, in turn, improves security of supply, particularly when Tasmania is experiencing drought conditions or there is a prolonged Basslink outage.

However, given that total exports from Tasmanian grid-connected solar PV systems for 2017-18 was around 93 GWh (ie around 0.6 per cent of total energy in storage[36]), the Economic Regulator considers that, at present, the impact is very small. The current regulatory arrangements do not provide a mechanism whereby security of supply benefits attributable

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35 Queensland Productivity Commission, *Solar Feed-in Pricing in Queensland: Draft Report*, March 2016, page 87.

36 Tasmanian Economic Regulator, *Energy in Tasmania Report, 2017-18*, page 5.

to solar PV customers can be recovered by the retailer and, therefore, included in the feed-in tariff.

3.4 Metering anomaly

The Economic Regulator sought feedback on the issues surrounding the metering anomaly where many solar owners receive the feed-in tariff rate only for excess power generated against the light and power tariff (T31) and not the hot water and heating tariff (T41).

In August 2013 the Tasmanian Renewable Energy Alliance (TREA) identified that, due to software issues with TasNetworks' meters, many solar owners would only be compensated for excess power generated against the light and power tariff (T31) and not the hot water and heating tariff (T41). Because of this, when a customer was consuming power on Tariff 41 while, at the same time exporting power produced by their solar panels they would not be adequately compensated for the power they were exporting to the grid.[37] In practice this means that solar owners are being charged 8.6c/kWh for using their own electricity (ie the difference in c/kWh between the T41 energy (usage) charge of 17.164c/kWh and the 2018-19 Regulated feed-in tariff rate of 8.541c/kWh).

In 2016, several submissions to the Regulator's 2016 Draft Investigation Report on feed-in tariffs also raised concerns that homeowners who invested in solar after 2013 were not receiving the full benefit of their contribution to the grid due to software issues with TasNetworks' meters.

At the time the Economic Regulator noted that while a solution had been identified, due to the costs and the incompatibility of the solution with TasNetworks' long-term tariff strategy the solution had not been implemented.

The Economic Regulator, in its 2016 Final Report , concluded that this issue was outside the scope of its investigation as metering was, at the time, TasNetworks' responsibility and the funding of metering software solutions in response to the identified issue was a matter for the Government and TasNetworks.

From December 2017, retailers became responsible for installing new and replacement meters, including advanced meters. Aurora Energy has advised that this metering issue affects customers with Type 6 meters and the new advanced Type 4 meters.

TREA raised the same issues in its submission to the Government's review, pointing out that solar owners connected to Tariff 31 were being disadvantaged by the metering anomaly and suggested that the issue was a barrier to effective take up of solar PV in Tasmania.[38]

TREA's submission to this investigation raised this issue and included correspondence between the TREA and Aurora Energy.[39]

The Economic Regulator notes that this issue remains unresolved but that it is outside the scope of this investigation.

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37 See TREA's website at https://tasrenew.org.au/metering/

38 Tasmanian Renewable Energy Alliance (TREA), *submission to solar feed-in tariff review*, August 2018.

39 Since 1 December 2017, retailers have been responsible for metering.

3.5 Time-varying feed-in tariff

All three submissions provided feedback on a time-varying feed-in tariff. TasNetworks, Aurora Energy and TREA outlined a range of risks and costs associated with the introduction of a time-varying feed-in tariff, including for customers and the network. The issues raised included:

- the effectiveness of price signals;
- potential network costs;
- limited ability to reduce network expenditure;
- complexity;
- potential disadvantages to Tasmanian customers;
- operational and financial costs;
- retailer risk;
- metering changes;
- customer behaviour and confusion; and
- implementation.

TasNetworks' submission raised concerns that the risks and costs may outweigh the potential benefits and that, if not designed correctly, a time-varying feed in tariff could potentially result in additional costs associated with managing the network. TasNetworks stated that localised network constraints represent a significant driver of network expenditure. However, it has been trialling other methods (such as network support payments) to manage geographical and/or temporal capacity issues and raised concerns that the addition of a time-varying feed-in tariff may reduce the effectiveness of such strategies, as well as increase costs and add unnecessary complexity.

Aurora Energy stated that it does not believe there is merit in introducing a time-varying feed-in tariff in Tasmania at this time. It argued that a time-varying tariff structure is likely to disadvantage Tasmanian customers, particularly those without additional battery technology. Aurora Energy noted that the majority of Tasmanian customers do not have batteries installed and therefore cannot benefit from a time-varying rate.

Aurora Energy also contended that there are a range of costs associated with introducing a time-varying feed-in tariff, including operational and financial costs (metering, billing and customer communication) and retailer risk (in relation to the wholesale energy cost component). It is specifically concerned that if the time-varying rates for time windows are based on wholesale spot prices, it would present a high commercial risk to Tasmanian retailers should a WEP order be in effect.

In considering the potential for the implementation of a time-varying feed-in tariff in Tasmania, Aurora Energy considered that any future transition to a time-varying feed-in tariff would require an appropriate level of engagement with customers and retailers. Aurora Energy's view is that the single-rate feed-in tariff should be retained and not phased out. TasNetwork's submission concurred with this view, stating that both a time-varying and single-rate feed-in tariff would be required for an indefinite period of time.

With regard to metering rollout costs, Aurora Energy is of the view that there is insufficient capacity in Tasmania to conduct a mass meter change-out for solar customers. It suggested that sufficient lead time would need to be allowed for to enable retailers to test the tariff with consumers and to understand its impacts, as well as the time required to implement the necessary changes to internal systems and processes.

Aurora Energy's submission also raised the issue of determining an appropriate method for estimating future wholesale prices. As discussed in the Economic Regulator's Draft Report, the illustrative time windows and wholesale prices presented were based on historic wholesale spot prices. An appropriate method for estimating future wholesale spot prices would need to be developed, should it be found there is merit in introducing a time-varying feed-in tariff in Tasmania.

In terms of the impact on customers and consumers' appetite for time-varying tariffs, both Aurora Energy and TREA expressed the view that solar owners have limited capacity to vary the time of export of surplus solar generation, thus limiting any potential benefits. TREA also pointed out that even those customers with a battery would benefit more by maximising self-consumption and minimising purchase of grid energy at peak prices, rather than using distributed energy resources to benefit from exporting on a time-varying feed in tariff. This was also the conclusion reached by Aurora Energy.

Finally, TREA's submission outlined the difficulty of introducing new tariff structures that require customer education and behavioural change. TREA noted that it has been actively promoting the time-of-use consumption tariff for residential customers, Tariff 93, and considers this is a more effective way of moving to cost-reflective arrangements for customers.

Given the issues raised in submissions, the Economic Regulator's final decision is not to make a determination on a time-varying feed-in tariff for the regulatory period 2019-20 to 2020-21. Recognising the complexity of issues raised, the Economic Regulator will seek further information from stakeholders and conduct more detailed analysis and provide a report on the issue by the end of 2019.

3.6 Matters outside the scope of this investigation

TREA's submission included comments on a range of matters that are outside of the scope of this investigation. These include:

- solar PV policy;
- alternative mechanisms to support distributed generation;
- network support payments;
- aggregation;
- smart meter rollout;
- network voltage regulation;
- non-monetary benefits of solar; and
- eligibility requirements.

The Economic Regulator considers that these are a matter of Government policy or are arrangements governed by the National Electricity Rules and, therefore, are outside the scope of this investigation.

4 FINAL DECISION

This Chapter sets out the Economic Regulator's final decision on the feed-in tariff rate to apply on mainland Tasmania from 1 July 2019 to 30 June 2021.

4.1 Methodology

The Economic Regulator's final decision is to calculate the feed-in tariff rate using the avoided cost method outlined in the Draft Report.

Under this approach, the following components are included in the calculation of the feed-in tariff rate:

- wholesale electricity price;
- avoided NEM market and ancillary service fees; and
- avoided distribution and transmission energy losses.

The feed-in tariff rate will be calculated to three decimal places in line with the presentation of standing offer prices.

4.1.1 Wholesale electricity price

The Economic Regulator will apply the wholesale electricity price used in determining standing offer prices in Tasmania in estimating the wholesale electricity price component of the feed-in tariff rate. That is, the Economic Regulator will:

- use the wholesale electricity price as determined by the Economic Regulator for standing offer prices; or
- if a WEP order is in effect for the relevant pricing period, use the WEP Order price.

On 10 May 2019, the Treasurer declared a WEP order price that is equivalent to 8.756 c/kWh for 2019-20. This is the wholesale electricity price that will be used to calculate the feed-in tariff rate for the 2019-20 financial year.

4.1.2 Estimate of the avoided NEM market and ancillary service fees

The market fees levied by AEMO are set in advance, through its budgeting process. The Economic Regulator's current estimate of the relevant 2019-20 NEM market fees is $0.52/MWh.[40]

The cost of ancillary services is recovered from market participants. AEMO publishes data on a weekly basis showing the cost recovery rate for ancillary services. For the purpose of determining a feed-in tariff that applies from 1 July 2019, the Economic Regulator expects that

[40] AEMO, *2019-20 Draft budget and fees*, May 2019. Market fees include general fees, allocated fees for market customers, full retail contestability (FRC) fees and the national transmission planner.

the average cost of ancillary services in 2019-20 will be consistent with the average from May 2018 to April 2019, which including Energy Consumers Australia fees, is estimated at $0.50/MWh.

When the cost of ancillary services are added to the relevant NEM market fees, the value of NEM market and ancillary service charges avoided when a retailer obtains electricity from a small-scale electricity generator is $1.02/MWh. Table 4.1 provides a breakdown of this calculation as it applies to standing offer customers in Tasmania.

Table 4.1 Estimate of market and ancillary service fees, 2019-20[41]

Component	Fee ($)	
AEMO market charges	$843 970	
FRC operations	$345 518	$0.02550 per connection point per week
ECA (Energy Consumers Australia) fees	$146 608	$0.01082 per connection point per week
Ancillary services	$1 001 514	
Customer load (2 293 085 MWh)		
Total AEMO charges	**$2 337 610**	**$1.019/MWh**

Source: AEMO, 2019-20 AEMO Draft Budget and fees, May 2019.

4.1.3 Estimate of the avoided distribution and transmission energy losses

Using data obtained from Aurora Energy and AEMO, the Economic Regulator estimates a customer weighted line loss factor of 1.0559. The loss factor is applied to the wholesale electricity price to estimate the value of losses in the calculation of the feed-in tariff rate. Table 4.2 sets out the inputs to this calculation.

Table 4.2 Inputs for calculating loss factors

Cost component	
Average marginal loss factor (MLF)	1.0053
Distribution loss factor (DLF)	1.0503
Total loss factor	**1.0559**

Source: Aurora Energy, and AEMO Distribution loss factors for the 2019-20 period, AEMO Regions and Marginal loss factors: FY2019-20.

4.2 Updating the feed-in tariff rate

The Economic Regulator will update the feed-in tariff rate each time standing offer prices are updated.

The feed-in tariff rate to apply from 1 July 2019 will be calculated by the Economic Regulator in accordance with the formula outlined in its Determination. The Economic Regulator will

41 Figures will be updated when AEMO's final budget and fees for 2019-20 are available.

apply the values it approves for each of the relevant formula components it uses in calculating Aurora Energy's Notional Maximum Revenue.

The feed-in tariff rate for 2019-20 will be published in mid-June 2019 at the same time as standing offer prices for 2019-20 are published. The feed-in tariff rate will be updated in June 2020 with respect to the 2020-21 financial year.

4.3 Provisional estimate of the feed-in tariff rate for 2019-20

The feed-in tariff for mainland Tasmania for 2019-20 is provisionally estimated to be 9.347 cents per kWh. Table 4.3 below sets out how each component contributes to the overall feed-in tariff rate.

Table 4.3 Estimated 2019-20 feed-in tariff rate for mainland Tasmania (c/kWh)

Component	c/kWh
Wholesale electricity price	8.756
Avoided NEM management and ancillary service charges	0.102
Value of avoided distribution and transmission and energy losses	0.489
Feed-in tariff rate	**9.347**

The estimated feed-in tariff is around nine per cent higher than for 2018-19, due mainly to the increase in the wholesale electricity price for 2019-20. The value of avoided energy losses has decreased due to a general decrease in electrical transmission and distribution losses within Tasmania.

The final feed-in tariff for 2019-20 will be calculated in mid-June 2019 and is to apply from 1 July 2019 until 30 June 2020.

As required under section 44G of the ESI Act, the Economic Regulator has made a Determination, the *Regulated Feed-in Tariff Rate Determination, May 2019*. The Determination is available on the Economic Regulator's website: www.economicregulator.tas.gov.au.

APPENDIX A: LEGAL CONTEXT

The *Electricity Supply Industry Act 1995* (ESI Act) and the *Electricity Supply Industry (Price Control and Related Matters) Regulations 2013* (Pricing Regulations) set out the legislative framework for feed-in tariffs and the determination of the Feed-in tariff rate.

Before the Economic Regulator makes a determination, Regulation 47B of the Pricing Regulations requires the Economic Regulator to conduct a pricing investigation. The Economic Regulator's Notice of his intention to conduct an investigation was published on 1 December 2018.

The Investigation timetable was revised in February 2019 to allow adequate time for the Economic Regulator, at the request of the Government, to investigate the merits of introducing a time-varying Feed-in tariff in Tasmania. An amended Notice with the updated timeframes for the Investigation, as published on 26 February 2019, is attached (Attachment 1). The Government's request is also attached (Attachment 2).

4.3.1 Feed-in tariff customers

Sections 44C and 44D of the ESI Act define two types of Feed-in tariff customers in respect of premises with qualifying systems: standard and transitional.

A qualifying system is defined in section 44B of the ESI Act as a system that:

- generates electricity from either solar, wind or water;
- complies with Australian Standard AS4777; and
- has a maximum generating capacity of 10 kW.[42]

Standard Feed-in tariff customers are those customers who have installed a qualifying system, or will install a system, but did not qualify for the Government's transitional Feed-in tariff rate, which applied to systems installed before 31 August 2013.[43] Transitional Feed-in tariff customers are those customers who qualified for the transitional Feed-in tariff rate.

4.3.2 Feed-in tariff rate

Section 44G of the ESI Act requires the Economic Regulator to determine the Feed-in tariff rate to be paid by authorised retailers to standard Feed-in tariff customers for energy exported to the electricity grid.

The Feed-in tariff rate may be expressed as either a rate in relation to a kWh of electricity, or a method for determining a rate in relation to a kWh. Differential Feed-in tariff rates that vary

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42 Customers with systems with generating capacity greater than 10 kW can negotiate a market feed-in tariff rate with their retailer.

43 The transitional feed-in tariff rate also applied to customers who entered into a contract to install a qualifying new micro distributed generation system, or extend an existing micro distributed generation system, and submitted an application to the distributor which was accepted with respect to that installation before 31 August 2013 provided that the new system or extension was installed and connected before 31 August 2014.

by premises class or other factors can also be set out in the Economic Regulator's determination.

4.3.3 Principles to be taken into account in making feed-in tariff rate determinations

Under section 44H of the ESI Act, the Economic Regulator is required to consider the following matters when making a Feed-in tariff rate determination:

(a) the fair and reasonable value to authorised retailers of electricity supplied to the distribution network by feed-in tariff customers;

(b) the net financial benefit, to authorised retailers, of electricity supplied to the distribution network by feed-in tariff customers, having regard to the costs of authorised retailers, including, but not limited to including –

  (i) the costs to authorised retailers of purchasing wholesale electricity; and

  (ii) other costs of authorised retailers in operating their retail electricity businesses;

(c) the other costs, or other benefits, that –

  (i) include those related to the distribution networks or transmission networks; and

  (ii) result, either directly or indirectly, from the supply of electricity to distribution networks by qualifying systems at premises of small customers;

(d) the COAG National Principles for Feed-in Tariff Arrangements, as those Principles apply from time to time;

(e) any arrangements of the Commonwealth, whether legislative or otherwise, in relation to the pricing of carbon emissions or other mechanisms to reduce the use of carbon-emitting fuels;

(f) the principle that the feed-in tariff rate specified in the determination should not have the effect that any customer would effectively be cross-subsidising any other customer;

(g) approaches, methodologies, findings or recommendations, taken or made in other jurisdictions for determining fair and reasonable feed-in tariff rates;

(h) any prescribed matters; and

(i) any other matter the Regulator thinks relevant.

APPENDIX B: SUBMISSIONS

Electricity businesses

- TasNetworks
- Aurora Energy

Peak body

- Tasmanian Renewable Energy Alliance (TREA)

ATTACHMENT 1: NOTICE OF INTENTION TO CONDUCT A REGULATED FEED-IN TARIFF INVESTIGATION

OFFICE of the TASMANIAN ECONOMIC REGULATOR

Amendment - Notice of intention to conduct a Regulated Feed-in Tariff Rate pricing investigation
Electricity Supply Industry Act 1995

Electricity Supply Industry (Pricing and Related Matters) Regulations 2013

The *Electricity Supply Industry Act 1995* requires the Tasmanian Economic Regulator to make a feed-in tariff rate determination, which sets the rate to be paid by authorised retailers to standard feed-in tariff customers for energy exported to the electricity grid.

The determination will apply to a regulatory period that commences on 1 July 2019 and ends on 30 June 2021. The Final investigation report will be released, and the determination will be made, on or before 30 May 2019.

Before the Economic Regulator makes a determination, the *Electricity Supply Industry (Pricing and Related Matters) Regulations 2013* require the Economic Regulator to conduct a pricing investigation.

The objective of the pricing investigation is to gather information to assist the Economic Regulator in making a determination.

The Economic Regulator will publish a draft report and draft determination by 31 March 2019. Written submissions (preferably by email) on the draft report and draft determination can be made to the Economic Regulator during a consultation period ending on 30 April 2019.

In accordance with the matters the Economic Regulator is required to consider in determining the regulated feed-in tariff rate, submissions on the draft report and draft determination will be invited on issues including the following:

(a) the fair and reasonable value to authorised retailers of electricity supplied to the distribution network by feed-in tariff customers;

(b) the net financial benefit, to authorised retailers, of electricity supplied to the distribution network by feed-in tariff customers, having regard to the costs of authorised retailers, including, but not limited to including –

(i) the costs to authorised retailers of purchasing wholesale electricity; and

(ii) other costs of authorised retailers in operating their retail electricity businesses;

(c) the other costs, or other benefits, that –

(i) include those related to the distribution networks or transmission networks; and

(ii) result, either directly or indirectly, from the supply of electricity to distribution networks by qualifying systems at premises of small customers;

(d) the COAG National Principles for Feed-in Tariff Arrangements, as those Principles apply from time to time;

(e) any arrangements of the Commonwealth, whether legislative or otherwise, in relation to the pricing of carbon emissions or other mechanisms to reduce the use of carbon-emitting fuels;

(f) the principle that the feed-in tariff rate specified in the determination should not have the effect that any customer would effectively be cross-subsidising any other customer;

(g) the possible introduction of a time-of-use feed-in tariff including consideration of costs and benefits; and

(h) approaches, methodologies, findings or recommendations, taken or made in other jurisdictions for determining fair and reasonable feed-in tariff rates.

The Economic Regulator's draft report and draft determination will be available on the Economic Regulator's website: www.economicregulator.tas.gov.au.

For further information regarding this notice please contact:
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ATTACHMENT 2: REQUEST TO INVESTIGATE TIME-VARYING FEED-IN TARIFFS

Treasurer

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11 DEC 2018

Tasmanian Government

Mr J Dimasi
Tasmanian Economic Regulator
Office of the Tasmanian Economic Regulator
GPO Box 770
HOBART TAS 7001

Dear Mr Dimasi

Time of Use Feed-in Tariffs

Under the Government's Tasmania-First Energy Policy a review of Solar Feed-in Tariff arrangements has been undertaken with the aim to ensure that those households and small businesses that have installed solar are suitably rewarded and that options are considered to incentivise further installation of solar in Tasmania.

As part of the review, it was noted that Time of Use Feed-in Tariffs have been introduced or are being considered by a number of jurisdictions. It was also noted that the effectiveness of Time of Use Feed-in Tariffs has not been determined in the Tasmanian context.

As a result, one of the actions proposed by the review committee was for the Tasmanian Economic Regulator to conduct an investigation into the feasibility of introducing a Time of Use Feed-in Tariff regime for the export of solar electricity into the grid.

I understand that the Tasmanian Economic Regulator undertakes an investigation every three years to determine how the Feed-in Tariff rate is to be calculated and that the Regulator will be undertaking its next investigation this financial year which will take effect from 1 July 2019.

Given the timing of the upcoming investigation, it would be appreciated if the potential introduction of Time of Use Feed-in Tariffs could be included and reported on either as part of the investigation or separately by no later than 31 December 2019.

I look forward to receiving a copy of your report.

Yours sincerely

Hon Peter Gutwein MP
Treasurer

ATTACHMENT 3: COAG NATIONAL FEED-IN TARIFF PRINCIPLES

Council of Australian Governments Meeting

Canberra, 7 December 2012

National Principles for Feed-in Tariff Arrangements

Micro generation to receive fair and reasonable value for exported energy

1. Governments agree that residential and small business consumers with grid connected micro generation[44] should have the right to export energy to the electricity grid and market participants should provide payment for exported electricity which reflects the value of that energy in the relevant electricity market and the relevant electricity network it feeds in to, taking into account the time of day during which energy is exported.

Any premium rate to be jurisdictionally determined, transitional and considered for public funding

2. That any jurisdictional or cooperative decisions to legislate rights for micro generation consumers to receive more than the value of their energy must:

    a) be a transitional measure (noting that a national emissions trading system will provide increasing support for low emissions technologies), with clearly defined time limits and review thresholds and be closed to new participants by 2014;

    b) for any new measures, or during any reviews of existing measures, undertake analysis to establish the benefits and costs of any subsidy against the objectives of that subsidy (taking into account other complementary measures in place to support micro generation consumers);

    c) give explicit consideration to compensation from public funds or specific levies rather than cross-subsidised by energy distributors or retailers; and

    d) not impose a disproportionate burden on other energy consumers without micro generation.

[44] These national principles apply to grid connected micro generation compliant with the relevant Australian Standard (AS4777).

SCER to ensure fair treatment of micro generation

3. That the Standing Council on Energy and Resources (SCER) should maintain regulatory arrangements for micro generation customers, consistent with the objectives of the relevant electricity legislation, whereby the:

    a) terms and conditions for compliant micro generation customers should be incorporated into the regulation of the minimum terms and conditions for retail contracts such that they are no less favourable than the terms and conditions for customers without micro generation;

    b) connection arrangements for micro generation customers should be standardised and simplified to recognise the market power imbalance between micro generation customers and networks; and

    c) assignment of network tariffs to micro generation consumers should be on the basis that they are treated no less favourably than customers without micro generation but with a similar load on the network.

feed-in tariff policy to be consistent with previous COAG agreements (particularly the Australian Energy Market Agreement and COAG complementary principles)

4. That the arrangements for micro generation consumers by SCER and jurisdictions:

    a) should not deter competition for their business from electricity retailers in jurisdictions where there is full retail contestability and innovation in the tariff offerings available to micro generation customers;

    b) in relation to jurisdictions in the National Electricity Market (NEM), should not interfere with the regulation of distribution tariffs or operation of the NEM under the National Electricity Law or duplicate the regulatory arrangements that are part of that Law;

    c) should be subject to independent regulatory oversight according to clear principles; and

    d) should be consistent with implementation of other intergovernmental agreements relating to energy, competition policy or climate change.