



**Regulated Feed-in Tariff Rate for Standard Feed-in Tariff
Customers**

Draft Investigation Report

February 2016

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Office of the Tasmanian Economic Regulator
Level 3, 21 Murray Street, Hobart TAS 7000
GPO Box 770, Hobart TAS 7001
Phone: (03) 6166 4422

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Submissions should be received by close of business on **15 March 2016**.

To facilitate the publication of submissions on OTTER's website, submissions by email are preferred. Submissions and enquiries may be made to:

office@economicregulator.tas.gov.au

or to

Glenn Bounds (Assistant Director – Price and Service)

Office of the Tasmanian Economic Regulator,

GPO Box 770,

Hobart 7001

Telephone: 03 6166 4422

A copy of this Draft Report may also be found on OTTER's website:

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1 INTRODUCTION

A Feed-in Tariff (FiT) is a pricing mechanism whereby an electricity utility pays a customer for the excess electricity generated by the customer's micro distributed generation systems and exported (ie 'fed-in') to the electricity grid.

1.1 Legislative framework and requirements

Section 44G of the *Electricity Supply Industry Act 1995* (ESI Act) requires the Tasmanian Economic Regulator (Economic Regulator) to make a FiT rate determination, which sets the rate to be paid by authorised retailers to standard FiT customers for energy exported to the electricity grid.

Under section 44C(d) of the ESI Act, standard FiT customers are those customers who installed a qualifying system but did not qualify for the Government's transitional FiT rate.

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 10kW¹.

Transitional FiT customers are customers who:

- had a qualifying micro distributed generation system installed as at 31 August 2013; or
- 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 which was accepted with respect to that installation before 31 August 2013 with the new system or extension installed and connected before 31 August 2014.

In respect of billing periods, and those parts of billing periods that expire before 1 January 2019, transitional FiT customers continue to be entitled to receive the FiT rates specified in Table 1.1.

¹ Customers with systems with generating capacity greater than 10kW continue to be eligible for the transitional feed-in rate where an application to connect a larger capacity system was submitted to, and accepted by, the electricity distributor before 31 August 2013.

Table 1.1: Feed-in tariff rates for transitional feed-in tariff customers

Customer Type	Column 1	Column 2	Column 3
	c/kWh	c/kWh for first 500 kWh supplied during each billing period	c/kWh for each kWh supplied after the first 500 kWh during each billing period
Residential	28.283 (including GST)	N/A - see Column 1	N/A - see Column 1
Small Business	N/A - see Columns 2 and 3	38.577 (including GST)	28.319 (including GST)

The determination will apply to a regulatory period that commences on 1 July 2016 and ends on 30 June 2019. The Final investigation report will be released, and the determination will be made, on or before 29 April 2016.

Before the Economic Regulator makes a determination, Regulation 47B of the *Electricity Supply Industry (Pricing and Related Matters) Regulations 2013* (Pricing Regulations) requires the Economic Regulator to conduct a pricing investigation. The Economic Regulator's Notice of the intention to conduct an investigation, as published on 2 July 2015 is attached (Attachment A).

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

Once made, the determination will apply to standard FiT customers for the entire regulatory period. For customers who are currently transitional FiT customers, the determination will apply in respect of billing periods, or parts of billing periods, that end on and after 1 January 2019 until the end of the regulatory period on 30 June 2019.²

1.2 Matters to be considered

In accordance with section 44H of the ESI Act, the Economic Regulator is required to consider the following matters when making a FiT 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;

² According to TasNetworks' *Annual Electricity Distribution Network Performance Report 2014-15*, as at 30 June 2015, there were 18 665 Transitional FiT customers and 4 127 Standard FiT customers.

- (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.

In response to the Economic Regulator's Notice of intention to conduct a Regulated Feed-in Tariff Investigation, the Tasmanian Renewable Energy Alliance (TREA) lodged an initial submission. This initial submission provided TREA's comments on the terms of reference and the proposed process and identified the factors it considered should be taken into account included when determining the FiT rate. A copy of TREA's initial submission is available on the Economic Regulator's website. The Economic Regulator will take the issues raised by TREA into account as part of its consideration of the submissions on this Draft Report noting that TREA has indicated that it will lodge a more detailed submission as part of the public consultation process.

1.3 Investigation process and timing

In preparing its Draft Report the Economic Regulator considered the matters listed in section 1.2 of this report and in particular considered:

- decisions made in other jurisdictions; and
- the specific circumstances applying in Tasmania.

The release of this Draft Report signifies the completion of this first phase of work, as highlighted in grey in Table 1.2.

Table 1.2 Investigation timetable

Milestone	Date
Publish Notice of Investigation	July 2015
Release Draft Report	5 February 2016
Submissions due	15 March 2016
Release Final Report	29 April 2016

This Draft Report discusses a range of costs and issues the Economic Regulator has considered in calculating a 'fair and reasonable' FiT for standard FiT customers in Tasmania. The Economic Regulator's proposed decisions are outlined in this Draft Report.

The *Consultation Policy and Procedures of the Tasmanian Economic Regulator* (Version 4, June 2014) states that the Economic Regulator will consult in relation to the exercise of statutory discretions or responsibilities, which affect the interest of entities, consumers or other persons.

The Economic Regulator therefore invites all interested parties to make submissions on the issues highlighted in this paper (as summarised in Section 1.5).

1.4 Structure of this Draft Report

The Draft Report is structured as follows:

- Chapter 2 provides background for the investigation, including the Council of Australian Government's (COAG's) agreed principles.
- Chapter 3 provides a summary of decisions made by regulators in other jurisdictions.
- Chapter 4 considers the direct financial impacts on retailers as a result of purchasing excess electricity generated by micro distributed generation systems and the implications for a 'fair and reasonable' FiT for Tasmania.
- Chapter 5 considers the indirect impacts of micro distributed generation systems and the implications for a 'fair and reasonable' FiT for Tasmania.
- Chapter 6 outlines the proposed formula for calculating a 'fair and reasonable' FiT for Tasmania, the proposed value of the FiT from 1 July 2016 and the suggested process for updating the FiT.

1.5 Summary of issues on which comment is sought

The Economic Regulator encourages public participation and invites submissions on the following matters:

Chapter 4

In relation to the direct financial benefits retailers receive from the FiT, the Economic Regulator is seeking comment on:

- the proposed inclusion of wholesale electricity costs, network losses and National Electricity Market (NEM) fees in calculating a 'fair and reasonable' FiT;
- estimating wholesale electricity costs using the regulated wholesale electricity price adopted as part of the determination and approval of standing offer retail prices rather than the market price method; and

the proposed exclusion of all other direct impacts.

Chapter 5

In relation to the indirect impacts of micro distributed generation systems, the Economic Regulator is seeking comment on the proposed exclusion of these impacts in calculating a 'fair and reasonable' FiT.

Chapter 6

In calculating a fair and reasonable FiT the Economic Regulator is seeking comment on:

- the proposed mathematical formula used to calculate the fair and reasonable FiT; and
- the proposed timing of, and process for, updating the FiT.

2 BACKGROUND

Electricity produced by customers connected to the grid is generally referred to as 'distributed generation', the most common form of which is small-scale, solar Photo Voltaic (PV) panels. Distributed generation systems are typically connected to the grid through 'import/export' meters. These meters record the quantity of electricity drawn from the grid separately from the quantity of electricity that the micro distributed generation system feeds into the grid.

Up until 30 August 2013, Aurora Energy offered, on a voluntary basis, a FiT based on a net metering buyback scheme (NMBS) which offered customers a 'one-for-one' (1:1) FiT at the regulated light and power tariff (Tariff 31 for residential customers) or general supply tariff (Tariff 22 for small business customers) for their net exported electricity.

In December 2012 the Council of Australian Governments (COAG) agreed on revised National Principles for Feed-in Tariff Arrangements (see Attachment C). These revised principles outline, amongst other issues, that all premium FiT arrangements are to be closed to new participants by 2014. Furthermore, all other FiT customers are to receive a 'fair and reasonable' value for their exported electricity. Consistent with this, all Australian jurisdictions including Tasmania have now closed their premium FiT schemes (with various 'grandfathering' provisions put in place for customers receiving the benefit of those premium FiT schemes as at the date of the change) and have determined new 'fair and reasonable' values for exported electricity for new FiT customers.

Consistent with the COAG reforms, a review of the FiT rate for Tasmania was conducted in 2013. Following the release of an issues paper on 16 May 2013 and consideration of submissions received on that paper, the following policy position was announced on 18 August 2013:

- the current one-for-one FiT arrangement to be closed at midnight on 30 August 2013 and grandfathered for existing (or contracted) installations until 1 January 2019;
- customers applying to install eligible micro distributed generation systems on or after 31 August 2013 to be entitled to a FiT of 8 cents per kWh from 31 August 2013 until 31 December 2013;
- the Economic Regulator to be required to determine the FiT rate to apply from 1 January 2014 for all new installations occurring on or after 31 August 2013; and
- the Economic Regulator to be required to review the FiT rate on an annual basis.

In accordance with Terms of Reference received from the then Minister for Finance on 20 August 2013, the Economic Regulator conducted an investigation and, on 31 October 2013, provided a special report to the Minister in accordance with section 9 of the ESI Act. In its special report the Economic Regulator recommended a 'fair and reasonable' value of the FiT to apply from 1 January 2014.

Legislation was passed in November 2013 which, amongst other things, provided the legal power for the first FiT determination to be made consistent with the recommendation made by the Regulator as to the minimum FiT rate in its report of October 2013.

The Economic Regulator subsequently made its *Regulated Feed in Tariff Determination for Standard Feed in Tariff Customers* on 6 December 2013, following the commencement of the relevant legislation. The 2013 Regulated FiT Rate Determination reflects the recommendations made in the Economic Regulator's October 2013 inquiry report. The determination commenced on 1 January 2014 and expires on 30 June 2016. The regulated FiT rates applying to standard FiT customers under the Regulated FiT Rate Determination are as shown in Table 2.1.

Table 2.1 Regulated FiT rates for standard FiT customers by Period³

Period	c/kWh (excluding GST)
1 January 2014 - 30 June 2014	8.282
1 July 2014 - 30 June 2015	5.551
1 July 2015 - 30 June 2016	5.500

2.1 Scope and structure of the FiT

The Economic Regulator is required to determine a 'fair and reasonable' FiT for micro distributed generation systems, as defined in Chapter 1. The Economic Regulator, is also required to assess the costs accruing, and benefits flowing, to customers, authorised retailers and distributors.

The Economic Regulator understands that solar PV systems are by far the most common source of micro distributed generation system in Tasmania. Given this, and considering the costs and benefits of determining different FiT rates for different generation technology types, the Regulator is proposing to determine a single FiT rate. As a consequence, much of the analysis in this report focuses on solar PV systems, though not exclusively. This approach is largely consistent with the approach adopted in other Australian jurisdictions.

That said, the Economic Regulator understands that other forms of eligible micro distributed generation systems exhibit similar characteristics to solar PV. Specifically, this includes how it is used by customers, how it is exported and the impact on the electricity network more broadly. Furthermore, based on the analysis in this report, the conclusion reached with respect to a 'fair and reasonable' FiT would, at present, be similar irrespective of the electricity generation technology source.

However, should conditions materially change in the future the Regulator may consider differential FiT arrangements based on generation technology.

³ The Economic Regulator determined the FiT rates to apply for 2014-15 and 2015-16 in June 2014 and June 2015 respectively.

Given the above, the terms micro distributed generation and solar PV are interchangeable throughout the report.

3 DECISIONS MADE BY REGULATORS IN OTHER JURISDICTIONS

This Chapter provides an overview of recent FiT decisions in other jurisdictions with respect to calculating a 'fair and reasonable' value of energy exported to the grid by small customers.

The information outlined in this Chapter will be used to inform the Economic Regulator's decision in respect to the regulated FiT for Tasmania in subsequent sections of this Draft Report.

3.1 Methodologies

Australian state and territory regulators have used one of two main methodologies to determine the FiT:

- the direct financial gain to retailers method; and
- the wholesale market method.

Each of these methods are discussed below.

3.1.1 Direct financial gain to retailers method

Under the direct financial gain to retailers method, changes in a retailer's costs and revenues arising from the export of excess electricity generated from solar PV systems to the grid are calculated taking into account the following costs:

- wholesale electricity purchases – since retailers are purchasing from solar PV customers and not from large scale generators;
- NEM market and ancillary fees – because these are levied on a retailer's net purchases through the NEM as measured by the Australian Energy Market Operator (AEMO); and
- electricity network losses - since solar PV exports are consumed close to where they are exported.

3.1.2 Wholesale market method

Under the wholesale method it is assumed that solar PV customers are like the large scale generators who sell electricity to energy retailers in the NEM. Importantly, under this method the price paid to the solar PV system owner for solar PV system exports takes into account the time when the excess electricity is exported.

This approach requires the following data to be obtained and analysed:

- obtain historical data on the market spot price on a half hourly basis;

- obtain historical data on the times of the day in which solar PV systems tend to be exporting to the grid; and
- forecast the spot price for the times of the day when solar PV systems are exporting to the grid.

The historical and forecast wholesale market values of solar PV exports are adjusted for electricity network losses on the basis that solar PV exports are consumed close to where they are exported.

3.2 Decisions of other regulators

3.2.1 New South Wales

In 2015, in response to a request made under with s43ECA of the *Electricity Supply Act 1995* (NSW) by the New South Wales Government, the Independent Pricing and Regulatory Tribunal (IPART) was asked to determine the retailer contribution and the voluntary benchmark range for solar FiT as a guide for households and small businesses with solar PV installations.

The retailer contribution is the component the retailer is required to pay eligible customers in accordance with NSW's Solar Bonus Scheme⁴ for electricity exported to the distribution network.

The voluntary benchmark range is IPART's estimate of the wholesale market value of solar PV exports for net metered customers. In its previous 2012 report, IPART stated that it considered that publication of the benchmark range would exert competitive pressures on those retailers who did not offer a FiT at that time⁵.

In determining the FiT rate in both 2013 and 2015, IPART has adopted the wholesale market method. For 2015-16 IPART estimated a benchmark range of between 4.7 cents per kWh and 6.1 cents per kWh and a retailer contribution of 5.2 cents per kWh⁶.

3.2.2 Queensland

In June 2015, in response to a request from the Minister for Energy and Water Supply under section 93 of the *Electricity Act 1994 (Qld)*, the Queensland Competition Authority (QCA) was required to determine the FiT for customers in regional Queensland for the 2015-16 financial year⁷.

⁴ The Solar Bonus Scheme commenced on 1 January 2010 and operates until 31 December 2016. The Scheme provides a subsidised FiT of 60 cents per kWh and is closed to new applicants.

⁵ 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 3.

⁶ IPART, *Solar feed-in tariffs, The subsidy-free value of electricity from small-scale solar PV units in 2015-16*, Energy – Final Report (October 2015).

⁷ The QCA was not required to determine a FiT to apply to customers in South-East Queensland in recognition of the competition that exists between retailers operating in that market.

The QCA adopts the direct financial gain to retailer method for estimating a fair and reasonable FiT and, for 2015-16, estimated a FiT of 6.348 cents per kWh⁸.

3.2.2.1 Queensland Productivity Inquiry

In August 2015, the Queensland Government requested the Queensland Productivity Commission (Commission) to conduct an inquiry with the objective of determining a fair price (or prices) for solar power generated by small (residential and business) customers that was exported to the electricity grid.

The terms of reference require the Commission to consider:

- *the public and consumer benefits from exported solar PV generation, including social,*
- *economic and environmental benefits;*
- *whether households and business are already fairly compensated for public and consumer benefits (such as through renewable energy programs, rebates and market contracts);*
- *the costs and benefits across the electricity supply chain due to the exported solar PV energy;*
- *taking into account temporal and locational factors;*
- *the perception of electricity customers about whether any cost to them resulting from the fair value is 'unreasonable';*
- *mechanisms in the electricity system which may prevent the true value of exported solar energy being realised/monetised; and*
- *the Government's 1 million rooftops target by 2020 (or 3 000 megawatts of solar PV).⁹*

The Commission is to release its draft report for public comment in mid-February 2016 with its final report to be submitted to Government by 31 May 2016. A copy of the Terms of Reference for the inquiry is attached as Attachment C.

3.2.3 Victoria

Under section 40FBB of the *Electricity Industry Act 2000* (Vic) the Essential Service Commission (ESC) may determine a FiT rate for purchases of small renewable energy generation electricity. In making its determination the ESC is required to take the following factors into account:

- prices of electricity in the wholesale electricity market; and

⁸ QCA, *Solar feed-in tariff for regional Queensland*, Final Report, June 2015.

⁹ Queensland Productivity Commission, *Issues Paper: Solar Feed-in Pricing in Queensland*, October 2015, page 2.

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

Applying the direct financial gain to retailer method, the ESC estimated a FiT of 5.0 cents per kWh for the 2016 calendar year¹⁰.

3.2.3.1 ESC Inquiry

On 11 September 2015, the Victorian Government requested the ESC to conduct an inquiry with the objective of establishing the true value of distributed generation to Victorian consumers.

In particular, the inquiry is to:

“...investigate whether current regulations for compensating Victorian households and businesses for generating solar power are adequate. It will also consider the environmental and social value of distributed generation.

The inquiry findings will be used to inform how feed-in tariffs – the amount people are paid for the solar power they produce for the network – should be structured in Victoria.”¹¹

Under the Terms of Reference, the ESC’s draft report was to be presented to Government by the end of November-2015 with the final report to be submitted to Government by the end of February 2016.

However, in December 2015, the ESC released a Proposed Approach Paper¹² in which the ESC proposed that:

“...the focus of this inquiry is on identifying the public benefit (as opposed to the private benefit) that arises from the investment in distributed generation, and determining whether and how a distributed generator is rewarded for any quantified public benefit it generates.

For the purposes of this inquiry, the Commission is proposing to define three elements of public benefit that could flow from the investment in distributed generation. These are:

- *The economic benefit of distributed generation to the electricity market and distribution network.*
- *Any environmental benefit that can be attributed to distributed generation.*

¹⁰ ESC, *Minimum electricity feed-in tariff to apply from 1 January 2016 – 31 December 2016*, August 2015.

¹¹ <http://www.premier.vic.gov.au/getting-a-better-deal-for-families-with-solar-panels/>

¹² ESC, *Inquiry into the true value of distributed generation – Proposed Approach Paper*, December 2015.

- *Any other benefits that can be attributed to distributed generation.*¹³

Based on the ESC's research to date, the Proposed Approach Paper notes the following observations:

"The electricity generated by a distributed generator can have an economic benefit to the wholesale electricity market. This is currently reflected in the feed-in tariff rate calculated annually by the Commission. The benefit to the electricity market varies by time and location. The Commission is proposing to evaluate the merits of developing a methodology for calculating the economic benefit on a time-of-use and locational basis.

The electricity generated by a distributed generator can reduce the carbon emissions associated with the supply of electricity. In the absence of a carbon price this benefit is no longer reflected in the electricity price. However, the existence of the Renewable Energy Target (RET) may mean that the environmental benefit of distributed generation is sufficiently reflected in the payments available via the RET. For sources of distributed generation not eligible for the RET, it is possible to calculate a carbon benefit based on the emissions intensity of the distributed generator.

Distributed generation can have an economic benefit to the distribution network. The extent of this value is highly dependent on the time and location of the generation. The Commission is proposing to take forward further work to determine if it is possible to develop a methodology to enable the calculation of this benefit.

*The Commission has so far been unable to identify specific environmental or other public benefits that a distributed generator provides to the distribution network, that are easily quantifiable. We are seeking evidence from stakeholders as to whether these benefits can be identified and quantified.*¹⁴

Stakeholder submissions on the Proposed Approach Paper are due by 12 February 2016.

The Proposed Approach Paper also indicated that draft reports on the energy value of distributed generation and the network value of distributed generation would be released in April 2016 and October 2016 respectively with the respective final reports released in August 2016 and February 2017.

A copy of the Terms of Reference for the inquiry is attached as Attachment D.

¹³ Ibid, pages III-IV.

¹⁴ Ibid, pages IV-V.

3.2.4 South Australia

Under section 25 of the *Essential Services Commission Act 2002* (SA) the Essential Service 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-in to 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).

ESCOSA also adopts the direct financial gain to retailer method and considered, similar to the outcomes in other jurisdictions, that the avoided costs are limited to wholesale costs, network losses and NEM fees.

For the 2016 calendar year ESCOSA determined a FiT of 6.8 cents per kWh¹⁵.

¹⁵ ESCOSA, *Retailer feed-in tariff 2016*, 2 December 2015.

4 DIRECT IMPACTS TO CONSIDER

This Chapter analyses the direct impacts to consider in determining a fair and reasonable FiT for Tasmania.

4.1 Introduction

In accordance with section 44H of the ESI Act, in determining what is a fair and reasonable FiT the Economic Regulator is required to consider the net financial benefits to retailers of exported electricity with respect to retailers' controllable (ie avoidable) costs. With the exception of IPART in New South Wales this is effectively the same methodology adopted by regulators in other Australian jurisdictions as outlined in Chapter 3.

In examining the net financial benefit to retailers the Economic Regulator has considered the ability of a retailer to avoid the following costs:

- the wholesale cost of purchasing electricity through the NEM;
- transmission network charges;
- distribution network charges;
- transmission and distribution losses;
- NEM fees;
- Renewable Energy Target (RET) costs;
- retail operating costs; and
- retail margin.

While the Economic Regulator notes that each of these items has been considered in other jurisdictions with similar conclusions, the Economic Regulator considers it important to consider each item on its merits in the Tasmanian context.

4.2 Wholesale electricity costs

Wholesale electricity costs are the costs of purchasing, through the NEM in the spot market, electricity that is then transmitted to customers through the transmission and distribution networks. Therefore, when a retailer purchases electricity from roof top solar PV systems the amount of electricity that must be purchased through the NEM is reduced.

Similar to the conclusions reached by regulators in other jurisdictions, the Economic Regulator considers that this is an avoided cost that delivers a net financial benefit to retailers and should be included in the estimate of the FiT.

The challenge is to determine the appropriate method to measure the amount of the avoided costs. Two methods have typically been adopted by regulators in other jurisdictions to estimate the avoided wholesale electricity costs.

4.2.1 Market price method

Under the market price method, a specific market price is determined at the actual time when rooftop solar PV systems tend to be exporting excess electricity to the grid. This involves determining the historical half-hourly times of solar PV system electricity exports and the spot price in the NEM at the time those exports occurred and then consider what future spot prices might be.

4.2.2 Regulated wholesale price method

Under the regulated wholesale price method the wholesale price adopted for FiT rate determination purposes is the price adopted under the standard offer price for regulated prices set by the relevant regulator.

The Economic Regulator adopted this approach in its 2013 Determination. In estimating Aurora Energy's Notional Maximum Revenue, and in subsequently determining standing offer prices, the Economic Regulator is required, under section 40AB(3)(a) of the ESI Act, to calculate wholesale electricity costs based on a wholesale electricity price. The wholesale electricity price is based on the forecast price for the regulated load following swap product. More details about the Economic Regulator's approach to estimating the wholesale electricity price and wholesale electricity costs are set out in the Economic Regulator's 2016 Standing Offer Determination Draft Report.¹⁶

The QCA also used this approach in its 2013 Determination. In its earlier Issues Paper, the QCA noted that:

“For residential consumption, the retailer is charged according to its share of the Net System Load Profile (NSLP) in the local network area, rather than the individual consumption patterns of each household that it services. As such, the benefit to the retailer is the extent to which the PV exports reduce its share of the NSLP. This does not necessarily reflect the spot prices that the exports would have achieved in the NEM at the time they were exported.”

The QCA also noted that:

“The Authority is attracted by the simplicity of (re-)using the wholesale energy cost estimate that it uses for Tariff 11 as the value of the avoided wholesale cost in the feed-in tariff.and is likely to

¹⁶ Tasmanian Economic Regulator, 2016 Standing Offer Investigation Draft Report (2016), Chapter 4.

provide the Authority's best estimate of the value of the PV exports to retailers in Energex's distribution area."¹⁷

4.2.3 Economic Regulator's draft conclusion on wholesale electricity costs

The Economic Regulator notes that the market price approach appears to be theoretically more consistent with COAG's National Principles for Feed in Tariff arrangements. Specifically, Principle 1 states that:

*"Governments agree that residential and small business consumers with grid connected micro generation 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."*¹⁸

However, in terms of simplicity and transparency, and noting the lack of effective competition in the wholesale electricity market in Tasmania, the Economic Regulator considers that adopting the wholesale electricity price used in determining standing offer prices in Tasmania to be preferable.

The Economic Regulator, therefore, proposes adopting the regulated wholesale electricity price as the basis for estimating the cost avoided by retailers in purchasing excess energy generated by solar PV systems.

4.3 Transmission costs

Transmission costs are the costs of operating and maintaining the transmission network. In terms of whether or not this cost can be avoided by retailers, there has been much debate in other jurisdictions between what is theoretically achievable and what can practically be achieved through the existing transmission charging structure.

Conceptually, transmission costs can be avoided through the purchase of excess electricity generated by solar PV systems as less electricity is purchased from large-scale generators and consequently less electricity is transmitted through the transmission system to customers.

However, regulators in other jurisdictions have considered that these costs are not avoidable and, therefore, should not be taken into account in calculating the FIT.

Specifically, ESCOSA considers that retailers include transmission (and distribution) charges on a customer's bill as a way of collecting amounts

¹⁷ QCA, Issues Paper, *Estimating a Fair and Reasonable Solar Feed-in Tariff for Queensland*, August 2012, pages 9-10.

¹⁸ Attachment C.

due to distribution and transmission entities and retailers do not have any ability to influence amend the amount that is charged.¹⁹

The QCA considered that:

“Excess electricity exported by PV customers is ultimately used by other customers on the network and will therefore register as metered consumption. As retailers are charged a variable network charge according to metered energy consumption, any PV exports that a retailer on-sells will still attract the full variable network charge. As such, network costs are unavoidable when a retailer on-sells solar PV exports and should therefore be excluded from the estimated export value.”²⁰

More recently, IPART noted that it had:

“...not included any avoided transmission expenditure in our wholesale market value because there is currently no mechanism available for retailers to claim avoided transmission costs on behalf of their PV customers.”²¹

The Economic Regulator consulted with TasNetworks to determine the nature of the charging structure in Tasmania and whether costs could be avoided. Based on these discussions, and similar to the conclusions reached by regulators in other jurisdictions, the Economic Regulator understands that transmission charges TasNetworks levies on the retailer are generally based on the amount of metered consumption at a customer’s property. This means that transmission charges are imposed on customers regardless of where energy is sourced, be it from hydro generation through the NEM or from a neighbouring rooftop solar PV system. Furthermore, TasNetworks passes these transmission charges directly to the retailer. A retailer cannot therefore derive a financial benefit from avoided transmission charges due to the purchase of excess solar electricity exported to the grid by solar PV customers.

Based on the above the Economic Regulator considers that transmission charges are not avoidable costs to a retailer and therefore should not be taken into account when calculating a ‘fair and reasonable’ FIT.

The Economic Regulator considers that any benefits from solar PV generation relating to the transmission network are likely to accrue to all customers through the AER’s network pricing approvals. The Economic Regulator also notes that there is currently no mechanism for retailers to claim such benefits specific to solar PV customers. Therefore, there is no means of accounting for, and including, any of these benefits in the FIT.

¹⁹ ESCOSA, *2012 Determination of solar feed-in-tariff premium, Final Price Determination* (2012), page 19.

²⁰ QCA, *Estimating a fair and reasonable solar feed-in-tariff for Queensland* (2013), page 22.

²¹ IPART, *Solar feed-in tariffs, The subsidy-free value of electricity from small-scale solar PV units in 2015-16, Final Report* (October 2015), page 11.

4.4 Distribution costs

Distribution costs are the costs of operating and maintaining the distribution network. The debate is similar to that for transmission charges in terms of whether or not these costs can be avoided by retailers.

Other Australian regulators have concluded that distribution charges do not represent an avoidable cost for retailers and, therefore, should not be included in the calculation of the FiT. For example, IPART noted that retailers are required to pay variable network distribution charges based on the gross amount of electricity they supply to customers. Charges are, therefore, incurred for electricity supplied regardless of where and by whom it was exported to the grid.²² IPART also acknowledged that whilst electricity produced from solar PV systems is often consumed in close proximity to where it is generated, such that very little of the distribution network is used, due to the current metering and billing arrangements retailers do not avoid distribution costs in respect of excess electricity generated by solar PV systems.

The Economic Regulator consulted with TasNetworks to determine the nature of the Tasmanian distribution charging structure and whether distribution costs could be avoided. Based on these discussions the Economic Regulator understands that retailers cannot make a financial gain on distribution charges when purchasing and on-selling excess electricity generated by solar PV systems. That is, as distribution charges are based on metered consumption regardless of the source of generation, TasNetworks passes these charges directly to retailers.

Based on the preceding discussion the Economic Regulator proposes that distribution charges are not avoidable costs to a retailer and therefore should not be taken into account when calculating the 'fair and reasonable' FiT.

The Economic Regulator considers that any benefits from solar PV generation relating to the distribution network are likely to accrue to all customers through the AER's network pricing approvals. The Economic Regulator also notes that there is currently no mechanism for retailers to claim such benefits specific to solar PV customers. Therefore, there is no means of accounting for, and including, any of these benefits in the FiT.

4.5 Network Loss factors

As electricity flows through the transmission and distribution systems, energy is lost due to electrical resistance and the heating of conductors. Due to these losses the amount of electricity generated must be greater than forecast demand to ensure that the network can meet forecast demand. Retail prices charged to customers include an amount for energy lost in the electricity network. There are two loss factors: the Distribution Loss Factor (DLF) and the Marginal Loss Factor (MLF).

²² 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 52.

The DLF represents the average energy loss incurred when electricity is transmitted over the distribution network.

The MLF represents the average energy loss incurred when electricity is transmitted over the transmission network. Distribution Network Service Provider's determine the DLFs to apply in each financial year and, after approval from the AER, provide the DLFs to AEMO for publication. AEMO determines and publishes MLFs for each NEM region for each financial year.

Other Australian regulators include loss factors when calculating their respective FiTs. This is because when electricity is purchased from roof top solar PV systems it is consumed nearby. This means that the electricity does not travel long distances across the transmission and distribution networks and the quantity of electricity lost is, therefore, negligible.

The Economic Regulator agrees with this position and proposes that loss factors should be taken into account when calculating the 'fair and reasonable' FiT.

4.6 NEM fees

NEM fees are the market and ancillary fees charged to retailers based on the amount of wholesale electricity they purchase through the NEM. When a retailer receives solar PV exports from its customers the amount of wholesale electricity that it needs to purchase from large scale generators through the NEM is reduced. This means that the retailer's liability for market fees and ancillary service fees is also reduced as it is calculated on a lower volume of wholesale electricity.

Given this, the Economic Regulator proposes taking NEM fees into account in calculating the 'fair and reasonable' FiT, which is consistent with the position of regulators in other jurisdictions.

4.7 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).

The LRET supports development of large projects such as wind farms and solar power stations. 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 and solar hot water heaters through the generation of Small-scale Technology Certificates (STCs). The SRES is an uncapped scheme therefore

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.

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 from an electricity grid (with an installed capacity of 100 MW or more).

On 17 February 2014, the Australian Government announced a review of the RET scheme by an Expert Panel. The Panel's review was released in August 2014 and concluded that the cost of the RET outweighed its benefits and that significant change was required. The review recommended that:

- the LRET be either closed to new entrants or modified so that targets to 2020 are set one year in advance and increase by half of projected additional electricity demand in that year; and
- the SRES be either terminated immediately or phased out more rapidly (by 2020 rather than 2030).

The Climate Change Authority subsequently conducted its biennial review as required by its enabling legislation and:

- stated that it did not favour any significant scaling back of the 2020 LRET of 41 000 GWh;
- recommended a rescheduling of the current target to increase the likelihood it will be met; and
- noted the challenges of climate change are ongoing and recommended the Government consider the role of the RET beyond 2020.

After considering the outcomes from these reviews, the Australian Government decided to set a new 2020 target for large-scale generation of 33 000 GWh. At the time the Government stated that this target will double the amount of large-scale renewable energy being delivered by the scheme compared to current levels and means that about 23.5 per cent of Australia's electricity generation in 2020 will be from renewable sources.²³ The legislation required to implement these changes was passed by the Australian Parliament on 23 June 2015.

²³ <http://www.environment.gov.au/climate-change/renewable-energy-target-scheme> (accessed 12 January 2016).

By law, electricity consumers pay for this government requirement through obligations imposed on wholesale electricity purchasers (including retailers) who then pass through the cost of complying with the obligations to customers.

The Economic Regulator understands that given that RET costs are calculated on the amount of electricity purchased each year by a retailer, whether from roof top solar PV systems or from large-scale generators through the NEM, retailers are unable to avoid RET costs. This is consistent with the findings of other regulators and the advice provided by the CER as part of the FiT reviews conducted in other jurisdictions.²⁴ IPART also noted that it would not be appropriate to provide FiT customers with a premium on the FiT (as compensation for the value of the renewable energy generated) as FiT customers already received the benefit of the value of the renewable energy certificates created following the installation of solar PV system by offsetting the costs of installation.²⁵

Given this, these costs are unavoidable to the retailer and the Economic Regulator proposes not taking RET costs into account when calculating the fair and reasonable FiT.

4.8 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 are not avoided by purchasing excess electricity generated by solar PV systems rather than electricity produced by large-scale generation through the NEM.

Regulators in other jurisdictions also considered whether retailers operating costs for serving solar PV system customers would be higher than the cost of serving other customers. Other regulators have noted that, whilst different

²⁴ 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 Queensland (2013)*, pages 23 and 24.

²⁵ 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.

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.²⁶

The Economic Regulator agrees with these views and proposes not taking retail operating costs into account when determining a 'fair and reasonable' FiT.

4.9 Retail margin

The retail margin is intended to compensate an electricity retailer for investing in the business and the risks it assumes in providing retail services. It is calculated in terms of a net margin on earnings before interest, tax, depreciation and amortisation (EBITA). 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.

As noted in section 4.1, the Economic Regulator has adopted the net financial benefit to a retailer method to measure the value of the FiT. Under this method the costs avoided by retailers by purchasing excess electricity generated by rooftop solar PV systems are passed on to rooftop solar PV system owners in the price they receive for that electricity. Hence, the net impact on the retailer is zero. Given this, the retail margin the retailer earns will not change.

As the retailer does not gain additional profit through the retail margin, the Economic Regulator proposes not taking the retail margin into account in calculating the 'fair and reasonable' FiT. This is the same conclusion reached by regulators in other jurisdictions.²⁷

4.10 Economic Regulator's draft conclusions on direct impacts

Based on the above analysis, the Economic Regulator proposes that the following direct items should be considered when calculating a 'fair and reasonable' FiT for Tasmania:

- wholesale electricity costs;

²⁶ 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.

²⁷ 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), pages 51-2 and QCA, *Estimating a fair and reasonable solar feed-in-tariff for Queensland* (2013), page 28.

- network losses; and
- NEM fees.

In relation to the direct financial benefits retailers receive with respect to the FiT, the Economic Regulator is seeking comment on:

- the proposed inclusion of wholesale electricity costs, network losses and NEM fees in calculating a fair and reasonable FiT;
- estimating wholesale electricity costs using the regulated wholesale electricity price adopted for the determination and approval of regulated standing offer prices rather than the market price method; and
- the proposed exclusion of all other direct impacts.

5 INDIRECT IMPACTS TO CONSIDER

This Chapter considers indirect costs and benefits associated with micro distributed generation systems and the appropriateness of including those costs and benefits when determining a fair and reasonable FiT.

5.1 Introduction

This Chapter examines the impact of increased installation of rooftop solar PV systems on:

- average network loss factors;
- wholesale electricity prices;
- potential deferral of network augmentation costs;
- the potential need for network reinforcing costs; and
- security of supply.

5.2 Average network loss factors

As discussed in Section 4.5, given that electricity exported from solar PV systems is consumed close to where it is generated, the energy losses that normally occur when electricity is transported across the transmission and distribution network are avoided. The Economic Regulator proposes taking these specific energy losses into account as a direct financial impact for retailers when determining a 'fair and reasonable' FiT.

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 roof top solar PV systems (be it used directly by solar PV system owners or exported to the grid), the less 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.

However, similar to other jurisdictions, network loss factors are averaged across the network for all customers. In this regard IPART noted that:

"If PV exports lead to reductions in average energy losses, this will be reflected in lower loss factors. In turn, lower loss factors should lead to lower retail prices for all small customers (all else being equal). However, it would be very difficult to restrict this benefit to PV customers only. This is because, under the current arrangements, a single loss factor applies across an entire customer class within the low voltage network of a distribution network supply area. This means that any financial benefit associated with reduced loss factors will be equally shared among all

*customers within that particular tariff class. Furthermore, the extent to which PV exports reduce network losses by any significant amount is unclear and would be practically difficult to calculate.*²⁸

Furthermore, it is unclear as to the extent to which losses within the network may have changed. It is difficult therefore to estimate what the impact would be and what amount, if any, should be transferred to solar PV system owners.

Given this, Economic Regulator considers that any reduction in average network loss factors should not be redirected to solar PV system owners in calculating the FiT. This is consistent with decisions of regulators in other Australian jurisdictions.

5.3 Impact on wholesale electricity prices

Regulators in other jurisdictions have also considered the benefit that solar PV generation can provide in lowering the wholesale spot price for electricity through what is referred to as the 'merit order effect'. 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. Solar PV generation reduces the amount of electricity that retailers need to purchase 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). As such, retailers, and subsequently customers, receive the benefits of lower wholesale electricity prices.

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 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."*²⁹

Unlike mainland Australia, which is capacity constrained, solar 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). However, it is considered that the relatively small scale of embedded solar PV generation, relative to the total amount of electricity generated in

²⁸ 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.

²⁹ 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 82.

Tasmania, means it is unlikely to have a measureable impact on wholesale electricity prices.

Given this, the Economic Regulator does not consider it appropriate to provide an additional return to roof top solar PV system owners through the FiT and proposes not taking into account any potential decrease in the spot price from the merit order effect or the impact of solar generation on Hydro Tasmania's storages when calculating the FiT.

5.4 Potential deferral of network augmentation costs

On the face of it the increased uptake of roof top solar PV systems may potentially lead to a reduction in future network costs. As demand for electricity increases so too does the need for electricity generation. Typically electricity is sourced from new large-scale generating plants. In addition, the transmission and/or distribution network may need to be extended to connect to the new power plant or be upgraded to handle the extra capacity. Since roof top solar PV systems 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, the Economic Regulator notes that 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 the 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. Individual parties would be compensated through lower charges as a result of their lower consumption. This is similar to the outcome for solar PV system owners who are charged less when they consume more of the electricity generated by their own solar PV system. The Economic Regulator considers that this is an appropriate market outcome and proposes not taking into account the value of any potential deferred network investment/augmentation when calculating the FiT.

Additionally, the Economic Regulator understands that networks are built 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.

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.³⁰

Given this, the Economic Regulator considers that the benefit of avoided network investment should accrue to all parties and proposes not taking this factor into account when calculating a 'fair and reasonable' FiT.

However, the Economic Regulator acknowledges that the introduction of embedded battery technology may assist with 'peak shaving' thereby deferring the need to augment the network. The availability of Time-of-Use tariffs and Time-of-Use FiT rates in conjunction with battery technology may also be beneficial to the network as customers could offset their own consumption in addition to exporting electricity to the network when demand is high. However, the Economic Regulator considers that the development of embedded battery storage technology is in its early stages and there is insufficient information at this time to assess the benefits of Time-of-Use FiT rates, although this issue may be a matter for further consideration in the future.

In summary, the Economic Regulator considers that it is too early to comment on the potential impact of embedded battery technology, and, in particular, on whether any impacts should be accounted for in the FiT rate.

5.5 Potential need for network reinforcement costs

The Economic Regulator also understands that increased installation of roof top solar PV systems has the potential to add additional costs and risks to the operation of electricity networks. Solar energy is recognised as an intermittent energy source. Unlike hydro, coal fired plants and other historical forms of generation, the primary energy/fuel source eg water and coal, cannot be stored and used when required. Solar energy must be converted into electrical energy as it becomes available, and consequently, solar generated electricity does not constantly flow into the electricity grid.

A side effect of this is that 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 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 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.³¹

³⁰ See for example, 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 66.

³¹ The Regulator understands that 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 -

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.

The Economic Regulator also understands that at present, it is difficult to predict when system frequency issues may arise due to the exportation of excess electricity generated by 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 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 FiT for rooftop solar PV owners.

5.6 Security of supply

The Economic Regulator recognises that the availability of additional generation from roof top solar PV systems reduces reliance on hydro generation. 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 Tasmanian grid-connect PV system output for 2014-15 was around 100GWh (ie around one per cent of Tasmania's total demand for that year³²), the Economic Regulator considers that, at present, the impact is small. The Economic Regulator also notes that the current regulatory arrangements do not provide a mechanism whereby the benefits attributable to solar PV customers can be recovered by the retailer and, therefore, included in the FiT.

installation requirements and AS/NZS 4777.2 Grid connection of energy systems via inverters - inverter requirements.

³² Tasmanian Economic Regulator, *Energy in Tasmania Report, 2014-15*, pages VI and 47.

5.7 Economic Regulator's draft conclusion on indirect impacts

Based on the above analysis, the Economic Regulator does not propose, at this point in time, including the indirect impacts discussed in this Chapter in calculating a 'fair and reasonable' FiT for Tasmania.

In relation to the indirect impacts of the export of excess electricity generated by micro distributed generation systems, the Economic Regulator is seeking comment on the proposed exclusion of the various indirect impacts in calculating a 'fair and reasonable' FiT.

6 CALCULATING A FAIR AND REASONABLE FEED-IN TARIFF

This Chapter outlines the Economic Regulator's proposed formula to be used in calculating the FIT for micro distributed generation systems for the regulatory period from 1 July 2016 to 30 June 2019 together with the Economic Regulator's proposed approach to updating the FIT during the period.

6.1 Calculating the FIT

Based on the analysis in the previous Chapters, the Economic Regulator considers that the FIT should be calculated using the following formula:

$$\text{FIT}_y = (\text{WEP}_y \times \text{MLF}_y \times \text{DLF}_y) + \text{AEMO}_y$$

Where:

FIT_y is the regulated fair and reasonable feed in tariff in c/kWh

y is the period

WEP_y is the wholesale electricity price calculated by the Economic Regulator in accordance with the 2016 Standing Offer Determination (Aurora Energy), during the annual standing offer price approval process, expressed in c/kWh.

MLF_y means the load weighted average marginal loss factor at the regional reference node for Tasmania for the relevant period as approved by the Economic Regulator in accordance with the 2016 Standing Offer Determination (Aurora Energy) during the annual standing offer price approval process.

DLF_y means the load weighted average distribution loss factor for the relevant period as approved by the Economic Regulator in accordance with the 2016 Standing Offer Determination (Aurora Energy) during the annual standing offer price approval process.

AEMO_y means the forecast charge, as billed by AEMO for market participant and ancillary services fees estimated by the Economic Regulator in accordance with the 2016 Standing Offer Determination (Aurora Energy), during the annual standing offer price approval process, expressed in c/kWh.

The Economic Regulator has also prepared a *Regulated Feed-in Tariff Rate for Standard Customers - Draft Determination* which was also released for consultation on 5 February 2016. The Draft Determination is attached as Appendix E to this Draft Report and is also available on the Economic Regulator's website.

It should be noted that the FIT Rate calculated in April 2016 when the Economic Regulator makes its final Determination and releases its Final Report will

likely differ from the FiT Rate outlined in the Economic Regulator's Draft Determination due to variations in the values for the various FiT formula components between the date of publication of the Draft Determination and the date of publication of the Regulator's Final Report and Determination.

The contents of the Economic Regulator's Final Report and Determination will depend also on comments received on this Draft Report and the Economic Regulator's consideration of those comments.

The Economic Regulator will also consider the findings from the ESC's and the Queensland Productivity Commission's current FiT inquiries subject to those findings being made publicly available within the Economic Regulator's statutory timeframes.

Applying the proposed Fit Rate formula and adopting the WEP calculated as at 19 January 2016, the proposed FiT Rate to apply for the period from 1 July 2016 to 30 June 2017 would be 6.535 c/kWh based on the components specified in Table 6.1.

Table 6.1 - Regulator's proposed Regulated Feed-in Tariff Rate to apply from 1 July 2016

	2016-17
Wholesale electricity cost (c/kWh)	6.1091
multiplied by	x
Marginal loss factor	1.0015
multiplied by	X
Distribution loss factor	1.0517
	6.4346
plus	+
NEM fees (c/kWh)	0.1002
Total FiT (c/kWh)	6.535

Source: Tasmanian Economic Regulator, *2016 Standing Offer Draft Determination*, 5 February 2016.

The FiT has been calculated to three decimal places in line with the presentation of Aurora Energy's standing offer prices.

6.2 Updating the FiT Rate

The Economic Regulator considers that the FiT Rate should be updated each time standing offer prices are updated. The Economic Regulator notes that section 44H requires the Economic Regulator to take into account the net financial benefits to retailers of exported electricity, among other things, when determining the FiT. This financial benefit will change each time the regulated standing offer price is updated because the elements that make up the estimated FiT are based on the same variables that are used to determine standing offer prices. The Economic Regulator considers therefore that updating the FiT Rate when standing offer prices change is appropriate.

The FiT Rate determined by the Economic Regulator in accordance with the formula outlined in its Draft Determination is to apply from 1 July 2016 until 30 June 2017. The FiT Rate will be updated in June 2017 and June 2018 with respect to the 2017-18 and 2018-19 financial years respectively. The FiT Rate will therefore be updated in conjunction with the annual standing offer price approval process referred to in the 2016 Standing Offer Draft Determination of January 2016 and as explained in the 2016 Standing Offer Investigation Draft Report published by the Economic Regulator in January 2016.

In calculating a 'fair and reasonable' FiT the Regulator is seeking comment on:

- the proposed mathematical formula used to calculate a 'fair and reasonable' FiT; and
- the proposed timing and process for updating the FiT.

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

**OFFICE of the
TASMANIAN
ECONOMIC
REGULATOR**



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.

Standard feed-in tariff customers are those customers who did not qualify for the Government's transitional feed-in tariff rate.

The determination will apply to a regulatory period that commences on 1 July 2016 and ends on 30 June 2019. The Final investigation report will be released, and the determination will be made, on or before 29 April 2016.

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 January 2016. 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 15 March 2016.

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; and

(g) 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:

Mr Paul Rowberry
Office of the Tasmanian Economic Regulator
Phone: (03) 6166 4422
Email: office@economicregulator.tas.gov.au

ATTACHMENT B: 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 generation³³ 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.

SCER to ensure fair treatment of micro generation

³³ These national principles apply to grid connected micro generation compliant with the relevant Australian Standard (AS4777).

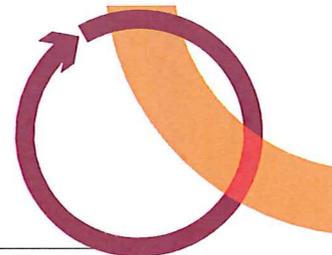
3. That the Standing Council on Energy and Resources (SCER) should maintain regulatory arrangements for micro generation customers, consistent with the objectives of the relevant electricity legislation, whereby the:
 - a) terms and conditions for compliant micro generation customers should be incorporated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

FiT 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.

**ATTACHMENT C: QUEENSLAND
PRODUCTIVITY COMMISSION - ISSUES
PAPER - SOLAR FEED-IN PRICING IN
QUEENSLAND - SCOPE OF INQUIRY**

ABOUT THE SOLAR INQUIRY



The Queensland Government has asked the QPC to determine a fair price (or fair prices) for solar power produced at the home or business premises of a 'small customer' and exported into the electricity grid.

SCOPE

The terms of reference asks the QPC to investigate and report on:

- A methodology for determining a fair price for solar energy generated by a 'small customer' and exported to a Queensland electricity grid that:
 - is based on the public and consumer benefits of exported solar energy
 - does not impose unreasonable network costs on electricity customers; particularly vulnerable customers
 - can be realised in the current electricity system.
- The price(s) for solar energy determined under the methodology.
- Any barriers or constraints (technical, market, regulatory or otherwise) to monetising the value of exported solar energy in Queensland in the current electricity system, and options to address those barriers.
- How the fair price (or fair prices) may be designed and paid (structure, unit measure, gross or net payment, payment mechanism).
- The mechanisms by which a fair price could be implemented in Queensland (mandatory or other).
- Appropriate review mechanisms and timeframes.

The full terms of reference are provided at **Appendix A**.

KEY DATES

Terms of Reference
20 August 2015

Issues Paper released
October 2015

Due date for submissions
23 November 2015

Release of Draft Report
mid February 2016

Due date for submissions
end March 2016

Final Report submitted to
government
31 May 2016

CONTACTS

Enquiries regarding this project should be directed to:

Kristy Bogaards
Tel (07) 3015 5106



REGISTRATION OF INTEREST - www.qpc.qld.gov.au/contact-us

If you wish to participate in the QPC's inquiry process, please register your interest to ensure you receive our email alerts on key developments including release of reports, call for submissions and details of public inquiries.

**ATTACHMENT D: ESSENTIAL SERVICES
COMMISSION - INQUIRY INTO THE TRUE
VALUE OF DISTRIBUTED GENERATION TO
VICTORIAN CONSUMERS - TERMS OF
REFERENCE**



Robin Scott MP

Minister for Finance
Minister for Multicultural Affairs

1 Macarthur Street
Melbourne Victoria 3002

Dr Ron Ben-David
Chairperson
Essential Services Commission
Level 37, 2 Lonsdale Street
MELBOURNE VIC 3000

Dear Dr Ben-David

ESC INQUIRY INTO THE TRUE VALUE OF DISTRIBUTED GENERATION TO VICTORIAN CONSUMERS

In accordance with my powers under section 41 of the *Essential Services Commission Act 2001*, I refer to the Essential Services Commission (ESC) the attached Terms of Reference for an inquiry and report into the true value of distributed generation to Victorian consumers.

The Department of Economic Development, Jobs, Transport and Resources has agreed to provide funding for the cost of this inquiry of \$260 000.

If you have any queries on this matter please contact Narelle Hardiman, Assistant Director, Economic Policy in the Department of Treasury and Finance on 9651 2463.

Yours sincerely

Robin Scott MP
Minister for Finance
Minister for Multicultural Affairs

Terms of Reference

Inquiry into the true value of distributed generation to Victorian Consumers

The Andrews Labor Government recognises the importance of renewable energy for Victoria. We acknowledge sustainable sources of energy can deliver economic, environmental and social benefits to the State, including jobs for regional Victoria.

The Labor Government is acting to support the growth of renewable energy in Victoria through a suite of policy measures. These include:

- Establishing a renewable energy target of no less than 20 per cent by 2020.
- Using the government's electricity purchasing power to support the creation of hundreds of renewable energy jobs.
- Ending unfair discrimination for solar customers.
- Helping communities to transition to a clean energy future.
- Improving access to the grid for solar customers.
- Developing a Renewable Energy Action Plan.
- Supporting clean energy jobs through the \$20 million New Energy Jobs Fund.

An important source of renewable energy for Victoria is distributed generation, such as household solar systems. In Victoria, there are over 245,000 solar systems installed across the State, with a total generation capacity of over 700 megawatts.

The Labor Government believes Victorians with small-scale renewable energy generation should be fairly compensated for the value their generation provides. In Opposition, we committed to undertake an inquiry into the true value of distributed generation. In Government, we are getting on with it, and asking the Essential Services Commission to commence this inquiry.

The inquiry will seek to ascertain the true value of distributed generation, including determining what value distributed generation provides to the electricity market and the network. The Essential Services Commission will also be asked to consider the environmental and social value of distributed generation.

The findings of the inquiry will help inform the design of the feed-in tariff arrangements in Victoria and assess current frameworks for the compensation of network value of distributed generation by relevant Victorian Electricity Industry Guidelines and the National Electricity Rules.

Scope of the inquiry

The inquiry will:

1. Examine the value of distributed generation including: the value of distributed generation for the wholesale electricity market; the value of distributed generation for the planning, investment and operation of the electricity network; and the environmental and social value of distributed generation.
2. Assess the adequacy of the current policy and regulatory frameworks governing the remuneration of distributed generation for the identified value it provides.

3. Make recommendations for any policy and or regulatory reform required to ensure effective compensation of the value of distributed generation in Victoria. These recommendations should have regard to the most appropriate policy and regulatory mechanisms for compensating different benefits of distributed generation, including considering their practicality and costs.

The inquiry will not consider the policy and regulatory frameworks governing the costs of connecting distributed generation to the network. The inquiry will also not consider whether the feed-in tariff should be deregulated.

The inquiry should have regard to reviews and reports completed in Victoria and other jurisdictions which may be relevant to the objectives of this inquiry.

The inquiry will involve extensive consultation with industry, environmental organisations and consumer advocacy groups.

A Draft Report on the True Value of Distributed Energy will be presented to Government by the end of November 2015.

A Final Report will be presented to Government by the end of February 2016.

**ATTACHMENT E: REGULATED FEED-IN
TARIFF RATE FOR STANDARD FEED-IN
TARIFF CUSTOMERS – DRAFT
DETERMINATION**



**Regulated Feed-In Tariff Rate
For Standard Feed-In Tariff Customers**

Draft Determination

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The Tasmanian Economic Regulator –

- (a) having conducted an investigation under Regulation 47B of the *Electricity Supply Industry (Pricing and Related Matters) Regulations 2013*; and
- (b) having considered the principles outlined in section 44H of the *Electricity Supply Industry Act 1995*,

makes the following Determination under section 44G(1) of the *Electricity Supply Industry Act 1995*.

Dated: 5 February 2016

Joe Dimasi

TASMANIAN ECONOMIC REGULATOR

PART 1 – PRELIMINARY

Commencement date, effective date and expiry date

1. In accordance with Regulation 47E(3) of the *Electricity Supply Industry (Pricing and Related Matters) Regulations 2013*, this Determination takes effect on 1 July 2016 and remains in effect until 30 June 2019.

Interpretation

2. (a) Words have the same meaning as defined in this determination. Expressions not defined in this determination have the same meaning as they have in the *Electricity Supply Industry (Pricing and Related Matters) Regulations 2013* and the *Electricity Supply Industry Act 1995*.

(b) In this Determination –

2016 Standing Offer Determination (Aurora Energy) means the Aurora Energy Pty Ltd Price-Regulated Retail Service Price Determination, issued on 5 February 2016 as amended from time to time;

“AEMO” means the Australian Energy Market Operator ABN 94 072 010 327;

“annual standing offer price approval process” has the same meaning as it has in the 2016 Standing Offer Determination (Aurora Energy);

“Aurora Energy” means Aurora Energy Pty Ltd ABN 85 082 464 622 and its successors;

“authorised retailer” has the same meaning as it has in the *Electricity Supply Industry Act 1995*;

“c/kWh” means cents per kWh;

“DLF” means distribution loss factor;

“feed-in tariff rate” has the same meaning as it has in the *Electricity Supply Industry Act 1995*;

“kWh” means a kilowatt-hour, the amount of energy used at a constant rate of one kilowatt for one hour (one kilowatt-hour is equivalent to 1 000 watt hours);

“MLF” means marginal loss factor;

“Period 1” has the same meaning as it has in the 2016 Standing Offer Determination (Aurora Energy);

“Period 2” has the same meaning as it has in the 2016 Standing Offer Determination (Aurora Energy);

“Period 3” has the same meaning as it has in the 2016 Standing Offer Determination (Aurora Energy);

“Regulator” has the same meaning as it has in the *Electricity Supply Industry Act 1995*;

“standard feed-in tariff customer” has the same meaning as it has in the *Electricity Supply Industry Act 1995*;

“wholesale electricity price” has the same meaning as it has in the 2016 Standing Offer Determination (Aurora Energy).

PART 2 – REGULATED FEED-IN TARIFF RATE

Method for determining a feed-in tariff rate in relation to a kilowatt hour

3. The feed-in tariff rate to be paid by an authorised retailer to a standard feed-in tariff customer during the term of this Determination is to be calculated in accordance with the method outlined in clause 4.
4. For the purposes of clause 3, the minimum feed-in tariff for Period 1, Period 2 and Period 3 is to be calculated in accordance with the following formula:

$$FIT_y = (WEP_y \times MLF_y \times DLF_y) + AEMO_y$$

Where:

FIT_y is the regulated feed-in tariff rate in c/kWh to be paid to standard feed-in tariff customers.

y is the relevant period (ie Period 1, Period 2 and Period 3).

WEP_y is the wholesale electricity price calculated by the Economic Regulator in accordance with the 2016 Standing Offer Determination (Aurora Energy), during the annual standing offer price approval process, expressed in c/kWh.

MLF_y means the load weighted average marginal loss factor at the regional reference node for Tasmania for the relevant period as approved by the Economic Regulator in accordance with the 2016 Standing Offer Determination (Aurora Energy) during the annual standing offer price approval process.

DLF_y means the load weighted average distribution loss factor for the relevant period as approved by the Economic Regulator in accordance with the 2016 Standing Offer Determination (Aurora Energy) during the annual standing offer price approval process.

AEMO_y means the forecast charge, as billed by AEMO for market participant and ancillary services fees estimated by the Economic Regulator in accordance with the 2016 Standing Offer Determination (Aurora Energy), during the annual standing offer price approval process, expressed in c/kWh.

PART 3 – MISCELLANEOUS PROVISIONS

5. The Regulator's decision in respect of all matters to do with the Determination will be final and no correspondence will be entered into.
 6. This Determination is administered by the Regulator.
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