



**Regulated Feed-in Tariff for Tasmanian Small  
Customers**

**Final Report**

**October 2013**

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# 1 INTRODUCTION

Under section 9 of the *Electricity Supply Industry Act 1995* (ESI Act) the Minister for Finance may request a special report from the Regulator. On 15 August 2013 the Minister requested the Regulator prepare a report investigating and recommending to the Government a ‘fair and reasonable’ value for net exported electricity that is fed into the Tasmanian electricity network by residential and small businesses customers. The Regulator received the request on 20 August 2013.

Specifically these customers:

- have grid-connected renewable generation system, up to a maximum total installed capacity of 10 kilowatt (kW);
- consume less than 150 megawatt hours of electricity (MWh) per annum; and
- are located on mainland Tasmania (including Bruny Island).

## 1.1 Matters to be considered

In accordance with the Terms of Reference (Attachment A), in investigating and reporting on the fair and reasonable value of electricity exports from these customers, the Regulator is to take into account:

- the net financial benefits to retailers of exported electricity with respect to retailers’ controllable costs, including, but not limited to:
  - the price that the retailer pays for wholesale electricity; and
  - the costs a retailer incurs in running its retail electricity business;
- consistency with the operation of a competitive Tasmanian retail electricity market;
- the principle that feed-in tariffs should not result in any cross-subsidies between customers or customer classes;
- the Commonwealth Government’s current carbon pricing arrangements;
- the Council of Australian Governments’ National Principles for Feed-in Tariff Arrangements and the concept of ‘fair and reasonable’ value reflected therein;
- approaches, methodologies, findings and/or recommendations from other jurisdictions the Regulator considers relevant; and
- any other matter the Regulator considers relevant.

The Regulator is also to consider and report on, where it considers it relevant or appropriate:

- any material costs and benefits of micro distributed generation to the Tasmanian transmission and/or distribution networks;
- any other material direct or indirect costs or benefits of micro distributed generation; and
- how any such material costs or benefits identified by the Regulator would be most appropriately captured (for example the potential for different feed-in tariff arrangements based on generation technology/or grid location).

## 1.2 Inquiry process and timing

Table 1.11.1 below outlines the inquiry process and timing. In preparing its Final Report the Regulator:

- considered all submissions it received before the request was received from the Minister and on the Draft Report;
- undertook consultation with Aurora Distribution, Transend Networks and the Australian Energy Regulator (AER);
- considered decisions made in other jurisdictions; and
- considered the specific circumstances in Tasmania.

The release of this Final Report signifies the completion of this inquiry.

**Table 1.1 Inquiry timetable**

Milestone	Date
Receipt of Terms of Reference	20 August 2013
Release of Draft Report	11 September 2013
Submissions due	2 October 2013
Final Report provided to the Minister	31 October 2013

## 1.3 Structure of this Final Report

The Final Report is structured as follows:

- Chapter 2 provides background for the inquiry, including the Council of Australian Government's (COAG's) agreed principles and the Tasmanian Government's recent policy decision with respect to FiT arrangements.
- 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 considers other issues raised by stakeholders not addressed elsewhere in this report.
- Chapter 7 presents the recommended formula for calculating a 'fair and reasonable' FiT for Tasmania, the recommended value of the FiT from 1 January 2014 and the suggested process for updating the FiT.

Discussions with respect to issues raised in submissions on the draft report are presented throughout the report where the relevant issues is presented in inline with the above structure of the Final Report and are also summarised at Attachment C to this report.

## 1.4 Final Report recommendations

The Final Report makes a number of conclusions in terms of how costs and benefits with respect to installation of micro generation should be treated. Ultimately, the Final Report recommends a FiT rate for new customers from 1 January 2014 and a process for updating the FiT during the interim pricing period which is outlined in chapter 7.



## 2 BACKGROUND

A 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 (i.e. 'fed-in') to the grid. Historically, FiTs have been based on a price being paid to the customer that is in excess of the normal wholesale cost of electricity generation, and sometimes in excess of the retail price of electricity.

The electricity produced by grid-connected customers 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 amount that the micro distributed generation system feeds into the grid.

Up until 30 August 2013, the FiT offered by Aurora on a voluntary basis was called the 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 to revised National Principles for Feed-in Tariff Arrangements (see Attachment B). 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, most Australian jurisdictions have closed their premium FiT schemes and have determined new 'fair and reasonable' values for exported electricity for new FiT customers.

Consistent with the COAG reforms, and as part of the Tasmanian Government's electricity reform process, the Government recently reviewed the FiT rate for Tasmania. Following the release of an issues paper on 16 May 2013<sup>1</sup> and consideration of submissions received on that paper, the Government announced the following policy position on 18 August 2013:

- the then current one-for-one FiT arrangement would be closed at midnight on 30 August 2013 and would be 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 are entitled to a 'transitional feed-in-tariff' of 8 c/kWh from 31 August 2013 until 31 December 2013;

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<sup>1</sup> Tasmanian Government (2013) "Feed-in Tariffs: Transition to full retail competition – issues paper".

- the Regulator will 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 Regulator will be required to review the FiT rate on an annual basis.

As outlined in Chapter 1, on 20 August 2013 the Regulator received a Terms of Reference from the Minister for Finance to conduct an inquiry and provide a special report under section 9 of the ESI Act on the 'fair and reasonable' value of a FiT to apply from 1 January 2014.

The Government introduced legislation in September 2013 which will, amongst other things, provide the legal power for the first FiT determination to be consistent with the Regulator's recommendation as to the minimum FiT rate, or the method for determining the minimum FiT rate, made in a report that the Minister requested before the legislation commenced. At the time of writing the legislation had passed the House of Assembly and was due to be considered by the Legislative Council.

The Regulator understands that it is intended that the legislation and associated regulations are to take effect in November 2013.

## 2.1 Scope and structure of the FiT

The Terms of Reference require the Regulator to investigate a 'fair and reasonable' FiT for micro distributed generation systems, as defined in Chapter 1. The Terms of Reference also require the Regulator, after investigating any material costs and benefits of micro distributed generation systems, to determine how such costs and benefits would be most appropriately captured, including for example, the potential for different FiT arrangements based on generation technology and/or grid location.

The 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 proposed in the Draft Report to determine a single FiT rate. As a consequence, much of the analysis in the report focused on solar PV systems, though not exclusively. This approach is largely consistent with the approach adopted in other Australian jurisdictions.

As noted in the Draft Report, the 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. The Regulator considered that, should conditions materially change in the future it may consider differential FiT arrangements for different generation technology sources.

In its submission to the Draft Report, the Clean Energy Council (CEC) consider that to maximise the economic benefits of distributed generation and storage the FiT

should be technology-neutral<sup>2</sup> (among other things). The views of stakeholders with respect to location specific FiT is also addressed within the report.

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

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<sup>2</sup> See Clean Energy Council (2013) "Clean Energy Council submission to the Tasmanian Economic Regulator: A Fair and Reasonable Feed-in Tariff for Tasmanian Small Customers", p.5.



## 3 DECISIONS MADE BY REGULATORS IN OTHER JURISDICTIONS

This Chapter provides an overview of recent FiT decisions made by regulators in other jurisdictions with respect to calculating a ‘fair and reasonable’ value. The information from this Chapter will be used to inform decisions for Tasmania in subsequent sections of this Final Report.

### 3.1 New South Wales

In 2012<sup>3</sup>, in response to a request from the New South Wales (NSW) Government, the Independent Pricing and Regulatory Tribunal (IPART) examined what it called the ‘subsidy free FiT’. IPART estimated an appropriate FiT using two methodologies:

- 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 this method, IPART considered the changes in a retailer’s costs and revenues arising from the export of excess electricity generated from solar PV systems to the grid. Specifically, IPART calculated the direct financial gain per kWh to retailers to be equal to:

the revenue per kilowatt hour (kWh) (i.e. the retail price paid by customers)

minus

unavoidable costs per kWh of PV electricity imported

The financial gain per kWh can also be considered to be the costs avoided by retailers as a result of purchasing excess electricity generated by solar PV systems instead of purchasing energy from large-scale generators in the national electricity market (NEM). Based on this analysis, IPART considered that the only costs that could be avoided by retailers are as follows:

- wholesale electricity purchases – since retailers are purchasing from solar PV customers and not from large-scale generators;

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<sup>3</sup> IPART (2012) “Solar feed-in tariffs, Setting a fair and reasonable value for electricity generated by small scale solar PV units in NSW”, final report.

- 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.

IPART assessed all other costs incurred by a retailer to be unavoidable and, therefore, excluded those costs from the direct financial gains flowing to retailers as a result of purchasing excess electricity generated by solar PV systems.

### 3.1.2 Wholesale market method

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

To assist in calculating an appropriate FiT under this methodology, IPART engaged Frontier Economics Pty Ltd to provide advice. In summary Frontier Economics adopted the following approach:

- obtained historical data on the market spot price on a half-hourly basis;
- obtained historical data on the times of the day in which solar PV systems tend to be exporting to the grid;
- forecast the spot price for the times of the day when solar PV systems are exporting to the grid.

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

### 3.1.3 IPART’s estimate

Table 3.1 contains IPART’s estimate from its 2013 report<sup>4</sup> to apply for the 2013-14 financial year. The Regulator notes that IPART identified a benchmark range rather than a mandatory value. IPART considered that publication of the benchmark range would exert competitive pressures on those retailers not currently offering a FiT.<sup>5</sup>

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<sup>4</sup> IPART (2013) “Solar feed-in-tariffs, the subsidy-free value of electricity from small-scale solar PV units from 1 July 2013”, p.4.

<sup>5</sup> IPART (2012) “Solar feed-in tariffs, Setting a fair and reasonable value for electricity generated by small scale solar PV units in NSW”, Final report, p.3.

**Table 3.1: IPART’s estimate of the value of solar PV system exports (\$2013-14, c/kWh)**

Method Used	2012-13	2013-14
Direct financial gain to retailers	7.9 – 13.2	6.6 – 11.2
Wholesale market method	7.9 – 10.1	8.3

Source: IPART (2013).

## 3.2 Queensland

The Queensland Competition Authority (QCA) adopts the direct financial gain to retailers method for estimating a fair and reasonable FiT. The QCA determined the revenue that can be earned by retailers from on-selling solar PV system exports by determining the appropriate tariff that the exported electricity can be sold for. Following this, the QCA subtracts all costs that it deems cannot be avoided. Similar to IPART’s findings, this led to the following avoided costs being taken into account:

- wholesale electricity purchased from the NEM;
- NEM market and ancillary fees; and
- network losses.

Based on this method, the QCA estimated a fair and reasonable FiT of 7.553 c/kWh for 2013-14 for customers in South East Queensland.<sup>6</sup> The QCA also estimated a range of between 7.064 c/kWh and 14.053 c/kWh for other areas covered by Ergon Energy’s distribution network reflecting the differential loss factors applying across the state.<sup>7</sup>

## 3.3 Victoria

In 2012 the Victorian Competition and Efficiency Commission (VCEC) undertook an inquiry for the Victorian Government on the FiT scheme in Victoria. As well as reviewing pricing, VCEC was asked to:

- review the design, efficiency and effectiveness of feed-in tariff schemes, including market-based gross FiT schemes, in the context of a national carbon price;
- provide a recommendation as to whether existing FiT arrangements should be continued, phased-out or amended. Where phase-out of existing arrangements is proposed, the appraisal should give consideration to whether any transitional arrangements may be necessary. Any changes to existing arrangements would not be applied retrospectively; and

<sup>6</sup> QCA (2013) “Estimating a fair and reasonable solar feed-in-tariff for Queensland”, p.30.

<sup>7</sup> Ibid, p.42.

- identify any State, and/or local regulatory, and/or other barriers, to the development of a network of distributed renewable and low emission generation in Victoria, including co-generation and tri-generation.<sup>8</sup>

The VCEC recommended to the Victorian Government that a new FiT for new distributed generated customers be established on the basis of the wholesale price of electricity (including the carbon price) adjusted for reduced network losses. The VCEC also noted that, based on advice it received, the efficient and fair market price for 2013 should be at a minimum, in the range of 6 c/kWh to 8 c/kWh.<sup>9</sup>

The Essential Services Commission (ESC) recently completed its review of FiT arrangements in Victoria to apply from 1 January 2014. The ESC adopted the same methodology as used by the VCEC and determined a 8 c/kWh FiT.<sup>10</sup>

### 3.4 South Australia

In 2011 the Essential Services Commission of South Australia (ESCOSA) reported its findings for South Australia's FiT, which was to apply from January 2012.<sup>11</sup> ESCOSA calculated the FiT for South Australia with respect to the benefit to retailers in terms of what it defined as a retailer's 'controllable costs', being wholesale electricity purchases and the cost the retailer incurs in running its business. ESCOSA considered that network fees could not be avoided by retailers and it is therefore appropriate that these costs be passed on to consumers in full. Table 3.2 presents ESCOSA's decisions for the 2011-12, 2012-13 and 2013-14 financial years. Similar to the outcomes in other jurisdictions, ESCOSA considered that the avoided costs are limited to wholesale costs, network losses and NEM fees.

**Table 3.2: ESCOSA regulated FiT (\$nominal, c/kWh)**

	2011-12	2012-13	2013-14
Reduced wholesale cost	6.4	8.9	10.2
Avoided losses	0.6	0.8	0.9
NEM fees	0.1	0.1	0.1
<b>Total</b>	<b>7.1</b>	<b>9.8</b>	<b>11.2</b>

Source: ESCOSA (2011)

<sup>8</sup> VCEC (2012) "Power from the people, inquiry into distributed generation", p.VII.

<sup>9</sup> Ibid, p.XXI.

<sup>10</sup> See ESC (2013) "Minimum electricity feed-in tariffs, for application from 1 January 2014 to 31 December 2014, Final Decision".

<sup>11</sup> See ESCOSA (2012) "2012 Determination of solar feed-in-tariff premium, final price determination".

At present, ESCOSA is reviewing South Australia's current FiT arrangements and is considering whether it should continue to set a regulated FiT.<sup>12</sup> In its draft determination, ESCOSA has recommended a minimum FiT rate of 7.6c/kWh and implementing a formal price-monitoring regime in respect of a retailer's regulated FiT offerings.<sup>13</sup>

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<sup>12</sup> See ESCOSA (2013) "Review of the solar feed-in tariff premium, issues paper".

<sup>13</sup> See ESCOSA (2013) "Retailer feed-in tariff, draft price determination, statement of reasons".



## 4 DIRECT IMPACTS TO CONSIDER

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

### 4.1 Introduction

In accordance with the Terms of Reference, in determining what is a fair and reasonable FiT the Regulator is required to consider the net financial benefits to retailers of exported electricity with respect to retailers' controllable (i.e. avoidable) costs. This is effectively the same methodology adopted by regulators in other jurisdictions in Australia as outlined in Chapter 3.

In examining the net financial benefit to retailers the 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.

Whilst the Regulator notes that each of these items has been considered by regulators in other jurisdictions with similar conclusions, the 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 electricity through the NEM in the spot market that is transmitted to customers through the transmission and distribution networks. When a retailer purchases electricity from roof top solar PV systems this reduces the amount of electricity that must be purchased through the NEM. Similar to the conclusions reached in other jurisdictions, the 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 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. As discussed in section 3.1.2, in NSW, 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. ESCOSA has adopted this approach in South Australia and IPART adopted this approach in NSW in deriving its lower benchmark estimate.

#### 4.2.2 Regulated wholesale price method

Under the regulated wholesale price method the wholesale price is simply the price adopted under the standard offer price for regulated prices set by the relevant regulator. In this sense, the avoided cost is an average price throughout the day rather than specific prices for the time of day when solar PV systems are exporting excess electricity to the grid. The QCA has adopted this approach and IPART adopted this approach as the basis for its upper benchmark estimate.

#### 4.2.3 Regulator's draft conclusion on wholesale electricity costs

The Regulator considers that the regulated wholesale electricity price method to be the most appropriate when setting the FiT for Tasmania. Under the wholesale market regulatory arrangements (to commence in Tasmania on 1 January 2014), Hydro Tasmania is required to offer regulated contracts to retailers to enable retailers to hedge their risk as they would in other jurisdictions. The prevailing prices under these hedge contracts is regulated using the same methodology that is used to determine the regulated wholesale electricity price in regulated standing offer retail prices. The Regulator therefore considers that the cost avoided by retailers in purchasing excess energy generated by solar PV systems is most likely the regulated wholesale electricity price rather than the spot prices available through the NEM.

The Regulator notes the market price approach may appear to be theoretically more consistent with the recently amended COAG 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<sup>14</sup> 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.*

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<sup>14</sup> These national principles apply to grid connected micro generation compliant with the relevant Australian Standard (AS4777).

However, the Regulator considers that the regulated wholesale electricity price approach is more appropriate because:

- all small customers will initially be paying regulated prices, therefore the financial gain to retailers is the regulated price;
- it is unclear what contracting arrangements retailers will make in the new wholesale regulatory environment; and
- the use of the regulated price would appear to be more consistent with the Terms of Reference in terms of considering the net financial impact on retailers since the majority of small customers are likely to be on regulated prices in the short-term.

In its submission to the Government's review<sup>15</sup>, Save Our Solar Tasmania (SOST), a lobby group representing the solar PV industry in Tasmania, considered that the carbon price incurred by retailers (which is passed on to customers) should be credited to solar PV system owners. SOST states that given that renewable power does not attract the carbon price it would be inherently unfair for that cost to be borne by a solar PV system owner and considers it would be profiteering if the carbon price component was not credited to solar PV system owners.<sup>16</sup>

The Regulator notes the regulated wholesale electricity price determined in the 2013 Standing Offer Determinations<sup>17</sup> was based on the output from a wholesale pricing model developed by Concept Consulting Limited for the Department of Treasury and Finance. As part of the 2013 Standing Offer Investigation, the Regulator accepted Treasury's advice that the model complied with the principles outlined in a Wholesale Contract Regulatory Instrument signed by the Minister on 29 July 2013.<sup>18</sup> The Regulator understands that the model takes into account Victorian contract prices which, in turn, account for the impact of the carbon price. The use of the regulated wholesale electricity price therefore effectively passes back to solar PV system owners the value of the carbon tax that would otherwise be incurred by retailers through purchases in the spot market. Furthermore, as discussed above, since the regulated price is likely to be similar to the actual price paid by retailers, retailers are unlikely to be impacted positively or negatively.

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<sup>15</sup> SOST provided a submission to the following issues paper released by the Tasmanian Government. Tasmanian Government (2013) "Feed-in Tariffs: Transition to full retail competition – issues paper". SOST also provided a copy of its submission to the Regulator.

<sup>16</sup> See Save our Solar Tasmania (2013) "Tasmanian Energy Reform, feed-in-tariffs submission, p.15.

<sup>17</sup> Tasmanian Economic Regulator (2013) "Report on the investigation of maximum prices for interim price-regulated electricity retail services for small customers on mainland Tasmania".

<sup>18</sup> Ibid, p.28.

#### 4.2.4 Submissions

One stakeholder<sup>19</sup> considered that the use of the regulated wholesale price was inappropriate because domestic solar-PV installations fall outside the concept of wholesale generation. This stakeholder defines rooftop solar PV owners as “prosumers” who have small electricity units that travel small distances as opposed to large scale wholesale generators where the value of the plant is amortised over decades. This stakeholder notes there are relatively few wholesale generators compared to the number of electricity consumers and transmission losses/costs form a significant part of the business model.

The Regulator notes the difference between large scale wholesale generators and rooftop PV customers however the Regulator also notes that rooftop solar PV customers produce electricity which is no different from the electricity produced by wholesale generators. Given this, the Regulator considers that the wholesale electricity price is the appropriate starting point in valuing electricity produced from rooftop solar PV. Other possible elements of the value of the electricity produced from rooftop solar PV is considered in further sections of this report.

Save Solar Tasmania and the Alternative Technology Association note that whilst they agree with the logic of using the regulated wholesale price they also consider that the Regulator should calculate and make available information about market based prices using Tasmanian specific information about spot prices in the NEM. These stakeholders consider that it would be beneficial to identify the value of solar electricity at the time it is generated in Tasmania as it would inform the policy debate about the benefits of the solar industry to Tasmania and would inform retailers who might want to offer solar owners market related time-of-use generation tariffs. These stakeholders consider this may benefit all customers because rooftop solar customers could angle their panels in a westerly direction to maximise output at times of peak demand and price and it would also facilitate the implementation of storage technologies.<sup>20</sup>

The Regulator notes that it publishes average spot prices each week for Tasmania in its weekly market watch publication. This publication is available on the OTTER website, at [www.economicregulator.tas.gov.au](http://www.economicregulator.tas.gov.au). Furthermore, the Regulator has presented a summary of spot prices for the 2012-13 financial year at Attachment D of this report grouped into months and quarterly segments during the day. The Regulator notes that AEMO produces detail data on spot prices in Tasmania at <http://www.aemo.com.au/Electricity/Data/Price-and-Demand>, and suggests that stakeholders may wish to observe and analyse this data themselves to meet their own specific needs.

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<sup>19</sup> See A. Fluck (2013) “Response to electricity regulator on the report Regulated Feed-in Tariff for Tasmania Small customers”.

<sup>20</sup> See Save Solar Tasmania and Alternative Technology Association (2013) “Fair feed-in tariffs for Tasmania, a joint submission in response to the Tasmanian Economic Regulator Draft Report of September 2013”, p.3.

#### 4.2.5 Regulator’s final conclusion

Based on the above, the Regulator concludes that the regulated wholesale price should be used in determining the regulated FiT.

### 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. This view is supported by SOST.<sup>21</sup>

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 due to distribution and transmission entities and retailers do not have any ability to influence the amount that is charged.<sup>22</sup> The QCA considers 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 excess electricity generated by a solar PV system which is exported to the grid and on-sold by a retailer to other customers 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.”<sup>23</sup> Similarly, IPART noted that, due to current metering and billing arrangements in NSW, retailers do not avoid any network costs.<sup>24</sup>

The Regulator consulted with Aurora Distribution and Transend Networks to determine the nature of the charging structure in Tasmania and whether retailers could avoid transmission costs. Based on these discussions and similar to the findings in other jurisdictions, the Regulator understands that transmission charges are 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

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<sup>21</sup> Ibid, p.15.

<sup>22</sup> ESCOSA (2012) “2012 Determination of solar feed-in-tariff premium, final price determination”, p.19.

<sup>23</sup> QCA (2013) “Estimating a fair and reasonable solar feed-in-tariff for Queensland”, p.22.

<sup>24</sup> IPART (2012) “Solar feed-in tariffs, Setting a fair and reasonable value for electricity generated by small scale solar PV units in NSW”, final report, p.6.

neighbouring rooftop solar PV system. Furthermore, these transmission charges are passed directly to Aurora Distribution and ultimately Transend Networks. Hence a retailer cannot derive a financial benefit from avoided transmission charges due to the purchase of excess solar electricity exported to the grid by solar PV customers.

Section 9.1.3 of Aurora Distribution's approved pricing proposal outlines the case in which Aurora Distribution may need to pay embedded generator's avoided TUoS charges. Specifically, Aurora notes that "the National Electricity Rules require Aurora to pay avoided TUoS usage charges to embedded generators who have generated electricity and transmitted this energy into Aurora's distribution network"<sup>25</sup>. This would suggest that a payment should be made for roof top solar PV systems for avoided TUoS charges. However, Aurora Distribution also considered that avoided TUoS payments reflect the avoided costs of upstream transmission network reinforcements in Tasmania. Aurora also considers that this benefits all customers and does not impact solely on the embedded generators connection point. Consequently Aurora assigns avoided TUoS to all tariff classes and not just to embedded generators.<sup>26</sup> Additionally, even if this changed in the future, Aurora Distribution, not retailers, would make direct payments to customers.

Based on the above the Regulator considered in its Draft Report that transmission charges are not avoidable costs for a retailer and therefore should not be taken into account when calculating a fair and reasonable FiT.

#### 4.3.1 Submissions

Several stakeholders disagreed with the Regulator's draft conclusion and considered that transmission costs should be included in determining the regulated FiT.

SOST considers that the avoided costs of transmission that are shared among network users to be a cross subsidy against solar users and therefore not fair and reasonable. Whilst SOST note that these costs are not avoided by retailers, they are avoided by the distributor and that there is a clear and easy system for payments to be made to PV rooftop owners in the form of an increased FiT. SOST considers that in considering a fair and reasonable FiT, in the same way that the level of the FiT should not result in a the price of power rising so that non PV owners are paying for the cost of a FiT, the price of power should not be such that it is reduced via a cross-subsidy from the fact that avoided costs are not being attributed to the source in which they are derived (roof top solar PV owners).<sup>27</sup>

In its submission SOST provide an estimate of network costs avoided (NCA) (as it terms it) for consideration for inclusion in the regulated FiT. This estimate is based

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<sup>25</sup> Aurora Energy (2012) "Aurora Energy pricing proposal 1 July 2013 – 30 June 2014", p.59, as approved by the AER.

<sup>26</sup> Ibid, p.60.

<sup>27</sup> See "Save our Solar Tasmania (2013) "Tasmanian Energy Reform, feed-in-tariffs submission to the Tasmanian Economic Regulator, pp.8-10.

on dividing the total transmission costs and 98 per cent of the distribution costs by the total amount of load outlined in the 2013 Standing Offer Determinations. Based on this methodology, SOST present a NCA of 12.76 c/kWh for inclusion in the regulated FiT. However, SOST have also stated verbally to the Regulator that the assumptions presented in its methodology are for consideration purposes. SOST requested the Regulator ask Aurora Distribution to investigate the amount of this avoided cost given that power from rooftop solar is already refined and does not need processing and uses very little of the transmission and distribution infrastructure.

CEC disagree that the benefits of avoided network investment should accrue to all parties as they consider this will not provide any financial incentive for investments that would defer network augmentation costs. The CEC also notes that the price of storage for electricity generated by micro distributed generation is falling which it considers provides a significant opportunity for deferring network augmentation costs. However, the CEC consider that this will only be realised if the FiT includes a critical peak payments commensurate with critical peak wholesale prices that recognises the financial benefit of distributed generation in terms of reduced network augmentation costs.<sup>28</sup>

#### 4.3.2 Regulator's final conclusion

The Regulator appreciates the view of stakeholders and considers that this is a difficult issue to address. Whilst the Regulator agrees that there would appear to be a cross subsidy from non-solar customers to solar customers, the difficulty is in measuring the magnitude of this cost and determining if it is material.

With respect to the issues raised by SOST, the Regulator consulted with the AER and Aurora Distribution in an attempt to ascertain the potential avoided costs associated with micro distributed generation. Both parties have indicated that it is unlikely that there would be avoided costs with respect to solar PV customers. This is because the majority of costs associated with the network are fixed costs associated with meeting peak demand and solar tends not to be generated during peak demand times in Tasmania (see section 5.4). Furthermore, with respect to section 9.1.3 of Aurora Distribution's approved pricing proposal the Regulator understands that Aurora is charged transmission charges by Transend on a capacity basis. The Regulator understands that embedded generators may be eligible for avoided TUoS if such generation can assist with avoiding costs, capacity constraints or investments required to remove such capacity constraints. This generation would likely need to be of a material size and provide a guaranteed supply when it is required. This means that it is unlikely that rooftop solar would lead to a reduction in capacity charges because solar electricity is not generated at those peak times when the capacity is required as discussed earlier.

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<sup>28</sup> See Clean Energy Council (2013) "Clean Energy Council submission to the Tasmanian Economic Regulator: A Fair and Reasonable Feed-in Tariff for Tasmanian Small Customers", pp.13-14.

That said the Regulator considers that if there were any avoided costs these would constitute a portion of operational costs that vary with respect to the amount of electricity that is transmitted through the transmission and distribution network. The Regulator undertook its own indicative analysis on what the portion of avoided network costs may be with respect to micro distributed generation. From its review of both Aurora Distribution's and Transend's approved revenue resets, the Regulator notes that operational costs appear to constitute around 28 per cent<sup>29</sup> of total allowed revenue for both entities in 2012-13 and 2013-14. Furthermore, based on the approved network costs in the 2013 Standing Offer Determinations, transmission costs constitute approximately 27 per cent of total network costs. Using these figures, the Regulator calculates that total operational costs (both distribution and transmission) are approximately 3.655 c/kWh of which 0.984 c/kWh relates to transmission operational costs only. However, the Regulator notes that this is a rough approximation for total operational costs and not those directly caused by transporting electricity across the transmission and distribution networks. That is, there are likely to be several operational costs which would be incurred irrespective of the amount of load on the network such as general maintenance and operational staff costs. Hence, the Regulator's estimates are an overestimation.

Unfortunately the Regulator does not have access to additional information to break down these estimates further at present. However, given the indicative estimates noted above, it is likely that any estimated avoided cost would be very small, if any. The Regulator therefore considers it more appropriate that the AER consider this issue because it has responsibility for these costs under the NER and is privy to this detailed information from Transend and Aurora as part of its revenue determinations.

With respect to the CEC's submission, the Regulator considers that the single rate FiT remains appropriate, based on the regulated WEP, due to the current regulatory and market arrangements that exist in Tasmania. However, the Regulator does not consider it unreasonable that individual customers could enter into contracts with a retailer to secure a higher FiT rate if they export electricity at peak times of the day. The Regulator notes that it is required to set a minimum FiT but this does not preclude individual customers entering into contracts with a retailer for a higher FiT rate. In such situations the Regulator considers that micro distributed generators would be able to access the peak prices as described by the CEC should it be mutually beneficial to both micro-distributed generators and retailers.

Given the above, the Regulator retains its draft report conclusion; that is, avoided network costs should not be included in the regulated FiT. Furthermore, any potential avoided network costs are best dealt with by the AER as part of Aurora Distribution's annual pricing approval process and Transend's revenue reset process.

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<sup>29</sup> See AER (2009) "Transend Transmission Determination 2009-10 to 2013-14", p.1. and AER (2012) "Final Distribution Determination, Aurora Energy Pty Ltd, 2012-13 to 2016-17", p.3.

## 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 as to whether or not this cost can be avoided by retailers.

SOST considers that PV system owners should only pay a demonstrated fair share of the costs of distribution. SOST also notes that power from roof top solar PV systems that is fed into the grid is used locally. Furthermore, the electricity is already refined and processed and does not need to be transformed into a useable state (as occurs between the transmission and distribution system). Given these factors, SOST considers that solar PV system owners should only be charged for local usage of the distribution network with the unused portion credited to solar PV system owners and added to the FiT.<sup>30</sup>

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, in NSW, 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.<sup>31</sup> 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 Regulator consulted with Aurora Distribution to determine the nature of the Tasmanian distribution charging structure and whether distribution costs could be avoided. Based on these discussions the 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, these charges are passed by retailers directly to Aurora Distribution.

Based on the preceding discussion the Regulator proposed in the draft report that distribution charges should not be taken into account when calculating the 'fair and reasonable' FiT.

### 4.4.1 Submissions and Regulator's final conclusion

As the submissions received with respect to distribution network costs addressed transmission network costs at the same time, the Regulator has covered those submissions in section 4.3. Given that discussion, the Regulator retains its draft

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<sup>30</sup> Save our Solar Tasmania (2013) "Tasmanian Energy Reform, feed-in-tariffs submission, p.15.

<sup>31</sup> IPART (2012) "Solar feed-in tariffs, Setting a fair and reasonable value for electricity generated by small scale solar PV units in NSW", final report, p.52.

report conclusion; that is, distribution charges should not be taken into account when calculating the regulated 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 that demand. Retail prices charged to customers therefore 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).

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 Regulator agrees with this position.

### 4.5.1 Submissions and Regulator's final conclusion

Stakeholders did not comment on network losses and the Regulator has therefore retained its draft report conclusions on this issue; that is, loss factors should be taken into account when calculating the regulated 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 Regulator proposed in the draft report taking NEM fees into account in calculating the 'fair and reasonable' FiT, which is consistent with the position of regulators in other jurisdictions.

#### 4.6.1 Submissions and Regulator’s final conclusion

Stakeholders did not comment on NEM fees and the Regulator has therefore retained its draft report conclusions on this issue; that is, NEM fees should be taken into account when calculating the regulated FiT.

### 4.7 Renewable Energy Target costs

The Australian Government has committed to a national RET scheme aimed at ensuring 20 per cent of Australia’s electricity supply is generated from renewable sources by 2020.

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 RET charge is made up of two schemes:

- the Large-scale 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.

The 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 regulators in other jurisdictions and the advice provided by the CER as part of the FiT reviews conducted in other jurisdictions.<sup>32</sup>

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<sup>32</sup> See IPART (2012) “Solar feed-in tariffs, Setting a fair and reasonable value for electricity generated by small scale solar PV units in NSW”, final report, p.53, . ESCOSA (2012) “2012 Determination of solar feed-in-tariff premium, final price determination”, p.42 and QCA (2013) “Estimating a fair and reasonable solar feed-in-tariff for Queensland”, pp.23 and 24.

Given this, the retailer is unable to avoid RET costs.

#### 4.7.1 Submissions and Regulator's final conclusion

Stakeholders did not comment on RET costs and the Regulator has therefore retained its draft report conclusions on this issue; that is, RET costs should not be taken into account when calculating the regulated 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 have also considered whether retailers operating costs for serving solar PV system customers would be higher than the cost of serving other non-solar PV system customers. Other regulators have noted that whilst 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. Moreover, IPART considered that the cost to serve solar PV system customers would likely fall over time as these customers become more familiar with their solar PV systems and that there could be cost savings in terms of reduced bad debt risks.<sup>33</sup>

The Regulator agrees with these views and concluded in the draft report that retail costs should not taken into account when calculating a 'fair and reasonable' FiT.

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<sup>33</sup> See IPART (2012) "Solar feed-in tariffs, Setting a fair and reasonable value for electricity generated by small scale solar PV units in NSW", final report, p.51, ESCOSA (2012) "2012 Determination of solar feed-in-tariff premium, final price determination", pp.43-44 and QCA (2013) "Estimating a fair and reasonable solar feed-in tariff for Queensland", pp.27-28.

#### 4.8.1 Submissions and Regulator’s final conclusion

Stakeholders did not comment on retail operating costs and the Regulator has therefore retained its draft report conclusions on this issue; that is, retail operating cost costs should not be taken into account when calculating the regulated 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). Practically, it is a percentage applied to the sum of the retailer’s costs as reviewed and approved by the Regulator.

The method adopted to measure the value of the FiT is the net financial benefit to a retailer. Under this method the costs avoided by retailers by purchasing excess electricity generated by rooftop solar PV systems is 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.

The retailer does not therefore gain additional profit through the retail margin and the Regulator proposed in the draft report 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.

#### 4.9.1 Submissions and Regulator’s final conclusion

Stakeholders did not comment on the retail margin and the Regulator has therefore retained its draft report conclusions on this issue; that is, the retail margin should not be taken into account when calculating the regulated FiT.

### 4.10 Regulator’s final conclusions on direct impacts

Based on the above analysis, consistent with its draft report proposals, the Regulator concludes that the following direct impacts should be considered when calculating a ‘fair and reasonable’ FiT for Tasmania:

- wholesale electricity costs
- network losses; and
- NEM fees.



## 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; and
- the potential for network reinforcing costs.

### 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 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 electricity users in Tasmania 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. 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, 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 other regulators.

### 5.2.1 Submissions and Regulator’s final conclusion

Stakeholders did not comment specifically on average network loss factors and the Regulator has therefore retained its draft report conclusions on this issue; that is, the impact on average network loss factors should not be taken into account when calculating the regulated FiT.

## 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 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.

Whilst this is the case, the Regulator does not consider it appropriate to provide an additional return to roof top solar PV system owners through the FiT to compensate for this impact. The lower spot price is a normal part of the competitive market process which occurs when the supply of a good or service increases. In the electricity sector, this could occur through additional solar PV systems, additional wind farms or additional hydro supply. In a competitive market, no individual firm can seek compensation for causing lower spot prices. The Regulator also considers this to be the most appropriate outcome for the Tasmanian electricity market.

Given this, the Regulator proposed in the draft report not taking into account any potential decrease in the spot price from the merit order effect when calculating the FiT. This is consistent with regulators’ decisions in other jurisdictions.

### 5.3.1 Submissions and Regulator’s final conclusion

Stakeholders did not comment specifically on the impact of solar PV generation on the derivation of the wholesale electricity price and the Regulator has therefore retained its draft report conclusions on this issue; that is, the impact on wholesale electricity prices through the merit order effect should not be taken into account when calculating the regulated 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 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 Regulator considers that this is an appropriate market outcome and proposed in the draft report not taking into account the value of any potential deferred network investment/augmentation when calculating the FiT.

Additionally, the 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 supplying peak demand. Consequently, networks still need to be built to meet peak demand and operated regardless of whether solar energy is generated or not, hence costs would not appear to be avoided.

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.<sup>34</sup>

SOST considers that rooftop solar PV system owners should be compensated for their contribution to the network. In particular, SOST considers increased installation of rooftop solar PV systems reduces the need for Hydro Tasmania to sell electricity to the local market and frees up capacity to sell more power to the mainland at a premium price through its retail arm Momentum Energy. SOST also considers that rooftop solar PV owners should be able to capture some of this benefit through increasing the FiT rate and passing the cost back to wholesalers (i.e. generators).

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<sup>34</sup> See VCEC (2012) "Power from the People: Inquiry into distributed generation, Summary Report", p.1., ESCOSA (2012) "ESCOSA (2012) "2012 Determination of solar feed-in-tariff premium, final price determination", p.48 and See IPART (2012) "Solar feed-in tariffs, Setting a fair and reasonable value for electricity generated by small scale solar PV units in NSW", final report, p.66.

However, the Regulator notes that this view assumes that Hydro Tasmania does not have the capacity to supply the Tasmanian market as well as the maximum possible exports over Basslink. Hydro Tasmania often exports a significant amount of electricity across Basslink to mainland customers whilst continuing to serve the local Tasmanian market. Hence, increased uptake of rooftop solar PV systems will not necessarily lead to increased Basslink exports as the interconnecting cable may have already reached its operational capacity.

Given this, the Regulator considered in the draft report that the benefit of avoided network investment should accrue to all parties and did not propose taking this factor into account when calculating a 'fair and reasonable' FiT.

#### 5.4.1 Submissions

Some stakeholders disagreed with this conclusion and considered that the regulated FiT should be set in a manner to provide incentives for distributed generation to export electricity at peak times when it is needed most. These stakeholders quoted comments from the Australian Energy Market Commission's (AEMC's) Power of Choice review and the Productivity Commission's (PC's) review into electricity networks.

Specifically, the PC considers that state and territory governments should institute arrangements for network businesses to remunerate micro distributed generators at a level that reflects the savings in network costs from such generation particularly taking into account the extent to which micro distributed generation reduces the requirement for peak network capacity. Furthermore, the PC recommends that the FiT should be set at the wholesale price of electricity at times of peak and non-peak demand.<sup>35</sup>

The AEMC has noted that there are issues with the application of avoided TUoS payments with respect to passing on avoided TUoS charges to embedded generators.<sup>36</sup> However, apart from avoided TUoS payments, the AEMC did not consider that the provision of incentive payments to distribution businesses for connection of distributed generation assets will necessarily translate into additional benefits for the market.<sup>37</sup> Rather, with respect to the potential for micro distributed generation to assist in avoiding network augmentation, the AEMC considered that this issue is best dealt with through reforming the current demand management and embedded generation connection incentive scheme in the National Electricity Rules to provide an appropriate return for demand side participation projects which deliver a net cost saving to consumers.

Furthermore, similar to the PC, the AEMC recommends as part of the review into a national approach to feed-in tariffs, consideration be given to the ability of time

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<sup>35</sup> See Productivity Commission (2013) "Electricity network regulation review, Chapter 13 distributed generation". P.522.

<sup>36</sup> See AEMC (2013) "Power of choice review", p.233.

<sup>37</sup> See AEMC (2013) "Power of choice review", p.236.

varying tariffs to encourage owners of distributed generation assets to maximise export of power during peak demand periods.

In its submission on the Draft Report, SOST considered that rooftop solar generation has the ability to assist with peak demand because Hydro power can be stored. SOST considers it unfair to compare Tasmania to mainland jurisdictions because these jurisdictions use coal fired power stations which must operate continuously and do not have the ability to store electricity as a hydro system is able to. SOST considers that with increased installation of rooftop solar, solar can be used at the time it is generated, saving more hydro power to be used during peak periods. Furthermore, SOST consider that whilst exports to Basslink may currently be at full capacity, in 2008 during the drought it was not and such a situation can return. Alternatively, SOST note that another interconnecting cable can be built to export further renewable electricity to mainland Australia.

#### 5.4.2 Regulator's final conclusion

After considering the submissions, the Regulator has decided to retain its draft report conclusion that potential avoided network augmentation costs should not be included in the regulated FiT. The Regulator considers that this position is consistent the AEMC and PC reviews which recommended the FiT should be based on the wholesale market price and other potential compensation should be provided through other mechanisms. In this regard, the Regulator considers that other compensation is best addressed through the AER as part of network revenue reviews, taking into account broader factors. The AER has access to data and has broader responsibility for assessing the efficiency of electricity networks. This includes consideration of non-network solutions when faced with supply constraints on the network.

With respect to time of day FiTs, as discussed in previous sections, the Regulator considers the single regulated FiT is more appropriate for Tasmania at this time based on the regulated price. However, the Regulator notes that this does not preclude micro distributed generators from entering into arrangements with Aurora on an unregulated time of day based FiT.

Finally, with respect to the issues raised by SOST, the Regulator considers that again these issues should be considered at a broader level such as through the AER's network reviews.

### 5.5 Potential network reinforcement costs

The 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 e.g. 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 characteristic 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 exported solar electricity may suddenly drop 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.<sup>38</sup>

However, whilst 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) interconnections such as Basslink. The present issue with solar generation is that its potential impacts are not well understood and therefore cannot be accurately taken into account by power system operators.

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 Regulator 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 the Regulator understands 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.

For the draft report the Regulator considered this to be a system wide issue, in which roof top solar PV systems play an increasing role. Given this, the Regulator considered that this issue was best considered at a system wide level rather than being incorporated in a FiT for rooftop solar PV owners.

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<sup>38</sup> The Regulator also understands that Standards Australia is currently undertaking a consultation to revise 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. This includes 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.

### 5.5.1 Submissions

In its submission, SOST considered that solar PV does not adversely impact the frequency of the grid and add additional costs. SOST note that they have developed and analysed a control model of a grid-connected distribution system to determine the stability in response to disturbances from the grid, such as grid frequency variations. SOST's conclusion is that for tie-in inverter connection of distributed generation, the grid frequency disturbances will not be amplified as long as the inverter controller is well-tuned. SOST considers that this coupled with the fact that Hydro generation has excellent rotational inertia (inferring very good frequency stability) is a good counter argument to the claim of potential grid frequency issues resulting in grid instability.<sup>39</sup> Furthermore SOST note that Aurora Distribution already restricts the size of rooftop solar PV installations to contain load limits on the current system. In addition to its submission on the draft report, SOST noted that in Tasmania Aurora Distribution's limit on the maximum size of a solar system that can be installed on its network to 10KW.

Furthermore, the CEC "...acknowledges that very high penetration by a large number of small, 'simple' generating systems on a single transformer can cause over-voltage and voltage fluctuation issues".<sup>40</sup> However, the CEC also notes that "what is less well understood is that newer and larger, more sophisticated generating systems can assist with grid management. For example, inverters with reactive power capability can assist with voltage management. These technologies are available now, but have never been required by the relevant standards or distributors and there are no incentives for their utilisation."<sup>41</sup>

### 5.5.2 Regulator's final conclusion

The Regulator, noting the position of the SOST and the CEC, has decided to retain its draft reports conclusion that this is an issue more appropriately addressed at the system wide level. For example, the Regulator notes that the AEMO is undertaking investigations concerning integration of renewable energy into the NEM.<sup>42</sup> Currently the focus is on wind generation however the Regulator considers that this may be an appropriate forum to consider frequency issues with respect to micro-distributed generation in the future.

## 5.6 Further research on indirect costs and benefits

Stakeholders considered that further research should be undertaken on the indirect benefits and other impacts of distributed generation in Tasmania for consideration in

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<sup>39</sup> Save our Solar Tasmania (2013) "Tasmanian Energy Reform, feed-in-tariffs submission to the Tasmanian Economic Regulator, p.13.

<sup>40</sup> See Clean Energy Council (2013) "Clean Energy Council submission to the Tasmanian Economic Regulator: A Fair and Reasonable Feed-in Tariff for Tasmanian Small Customers", p.9.

<sup>41</sup> Ibid

<sup>42</sup> See <http://www.aemo.com.au/Electricity/Planning/Integrating-Renewable-Energy>

future FiT determinations. The Regulator notes that it was limited by the timeframe for this investigation and appreciates that further work could be undertaken in this area. However the Regulator considers that it has covered the major relevant issues at this time particularly with reference to other jurisdiction's reviews. Furthermore, the Regulator does not necessarily consider that further research on these indirect impacts would lead to different conclusions being reached on these issues having regard to the additional information that is currently available. The Regulator has however addressed issues raised by stakeholders on other matters in the following chapter.

## **5.7 Regulator's final conclusion on indirect impacts**

Based on the above analysis, the Regulator concludes that none of the indirect impacts discussed in this Chapter should be taken into account in calculating a 'fair and reasonable' FiT for Tasmania.

## 6 OTHER ISSUES RAISED BY STAKEHOLDERS

This Chapter considers other issues raised by stakeholders that are not addressed elsewhere in this report.

### 6.1 Environmental impacts

Stakeholders suggested the environmental benefits of rooftop solar PV should be included when considering the regulated FiT. Furthermore, the CEC considered that given the Commonwealth Government's intention to remove the carbon tax, there is an important role for states and territories in dealing with climate change policy, including support for the increased uptake of small scale renewable generations.<sup>43</sup> The Regulator acknowledges that there are environmental benefits from using solar generation as opposed to other more traditional forms of power generation such as coal fired power. That said the Regulator considers that these issues are outside its Terms of Reference and are therefore more appropriately addressed at the policy level by State and Commonwealth governments.

### 6.2 Recovery of rooftop solar PV fixed costs

Stakeholders raised concerns that rooftop solar PV owners should be able to recover their fixed costs, including the cost of repairs and replacement of rooftop solar PV systems.<sup>44</sup> These stakeholders were concerned that the Regulator's draft conclusion may not allow for recovery of such costs.

The Regulator notes that in its Terms of Reference it was required to consider, among other things, the net financial benefit to retailers of electricity exported from rooftop solar PV. Based on this methodology, the largest component of net financial benefit to retailers is the wholesale market price of generation. In this sense, the regulated FiT is largely based on what might be the average price received by wholesale generators in the wholesale market, reflected by the regulated wholesale electricity price in standing offer prices.

The Regulator also notes that wholesale generators also face fixed costs and repairs with respect to their systems. However the wholesale market spot price is not regulated. Wholesalers compete in this market and sell the electricity their systems produce at a price that the market is willing to pay. This is a normal outcome of a competitive market in which wholesalers will only participate if they believe that they can recover all of their costs. It is the wholesale generation market

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<sup>43</sup> See Clean Energy Council (2013) "Clean Energy Council submission to the Tasmanian Economic Regulator: A Fair and Reasonable Feed-in Tariff for Tasmanian Small Customers", p.14.

<sup>44</sup> See Jennings and Kefford and Cameron submissions.

to which electricity from rooftop solar PV systems competes with and the Regulator therefore considers that a regulated FiT based on the price received by wholesale generators is reasonable.

Whilst the Regulator appreciates that this may put pressure on new solar PV owners in the near term in terms of the ability to recover costs, the Regulator notes that previously costs were effectively being recovered through a subsidy provided by Aurora. The Regulator does not consider it appropriate to reinstate some form of subsidy for new installations. Rather, the setting of a regulated FiT based on what the market will bear will put pressure on the solar industry to continue to improve efficiency and reduce cost as has been the case in recent years. Furthermore, the industry can evolve, such as through the methods discussed in submissions with improved battery technology (for use by rooftop solar PV owners at times when they do not generate electricity) or through voluntary arrangements with Aurora or other new retailers that may enter the Tasmanian market from 1 July 2014.

### 6.3 Voluntary time of use FiT

Some stakeholders considered that the Regulator should make recommendations on a voluntary time of generation FiT to support installations that provide net benefit to the electricity system by generating at time of maximum demand and higher wholesale prices. The Regulator does not consider it appropriate to make recommendations on such arrangements as it sees these as being normal potential competitive market outcomes. However, as discussed earlier, the Regulator has published a summary list of market spot prices in Tasmania for 2012-13 at Appendix D that may assist some stakeholders in any market negotiations they may undertake.

### 6.4 FiT should be based on system wide benefits and not that of a retailer

Stakeholders considered that the FiT should be based on the system-wide benefits of micro distributed generation and not the financial benefit to retailers. In particular, the CEC quote the Essential Services Commission (ESC) in Victoria:

“One limitation of this approach is that it is contingent on the structure of financial settlements in the wholesale electricity pool and of transactions between retailers and distributors or other input suppliers... the structure of transactions between retailers and distributors may not yet fully reflect principles established or proposed by relevant regulatory agencies. For example, the Australian Energy Market Commission has stated that there remain shortcomings in the existing arrangements relating to passing-on avoided Transmission Use-of-System charges to embedded generators under the National Electricity Rules. The Productivity Commission has

recommended changes to the arrangements by which embedded generators are reimbursed by network businesses for savings in network costs.”<sup>45</sup>

The Regulator notes that whilst the ESC considered the system-wide benefits of micro distributed generation, the ESC’s recommended FiT did not include any system-wide benefits in its calculation. The ESC noted that whilst there may be system-wide benefits associated with avoided network costs these costs are difficult to measure. Furthermore, the ESC heeded advice from the VCEC that suggested that any distribution network value is appropriately dealt with outside the FiT, which the ESC notes is consistent with section 5 of the National Electricity Rules. That said, the ESC noted that it agrees with the submission it received from the CEC for its review, which argued that more data and analysis is needed to determine whether there is any location-specific network value.<sup>46</sup>

In its submission on the Regulator’s Draft Report, the CEC noted that it considered that in the near future affordable and reliable battery storage will give customers the option of removing themselves from the grid altogether that would lead to increased disconnections and consequently inefficient use of the network. The CEC considered that there is more economic benefit to be gained from retaining distributed generation on the grid and to ensure that the potential economic benefits of distributed generation and storage are realised, feed-in tariffs must be fair and efficient, encouraging demand-side management and distributed generation at the times and in the places where it is of most benefit. This includes competing during critical peak periods when the system is under strain and the power is most needed.

<sup>47</sup>

Save Solar Tasmania and the Alternative Technology Association also considered that the Regulator should work with Aurora to identify locations in which a higher FiT based on location, and time, of generation would provide cost savings to the transmission and distribution network and hence all consumers.

The Regulator appreciates these views but similar to its findings under section 5.4 above considers that these issues are best addressed by the AEMC and the AER who have responsibility for network regulation. As in section 5.4 the Regulator notes that the AER has responsibility for considering the efficient cost of network businesses and encouraging non-network solutions, such as micro-distributed generation, when it is more cost effective to do so. This includes the payment of avoided TUoS charges in locations of constraint on the network and where embedded generators can assist to alleviate that constraint as discussed in section 4.3. The issue of efficient network investment requires this broader consideration and the Regulator considers that the FiT should not be used as a

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<sup>45</sup> See CEC submission, paraphrased from ESC (2013) “Minimum electricity feed-in tariffs, for application from 1 January 2014 to 31 December 2014, Final Decision”, p.17.

<sup>46</sup> See ESC (2013) “Minimum electricity feed-in tariffs, for application from 1 January 2014 to 31 December 2014, Final Decision”, pp.22-23.

<sup>47</sup> See Clean Energy Council (2013) “Clean Energy Council submission to the Tasmanian Economic Regulator: A Fair and Reasonable Feed-in Tariff for Tasmanian Small Customers”, p.8.

mechanism to encourage or discourage any particular investment. Rather the appropriate mix of investment for the state needs to have broader considerations taken into account.

In terms of time and location specific tariffs, the Regulator does not consider these to be appropriate at this time for Tasmania. That said, as indicated previously, this does not preclude customers from entering into unregulated arrangements with Aurora or other retailers as part of a competitive market outcome.

## **6.5 Retailer profits**

Some stakeholders considered that the recommended FiT would lead to additional profits being earned by retailers and other entities. These stakeholders also considered that the 1:1 FiT was not a premium FiT.

The Regulator notes that whilst the predominant method used by the Regulator (and regulators in other jurisdictions) is called the “net financial benefits to retailers” method, there is not necessarily an actual financial benefit to retailers of a regulated FiT. This method is purely a tool to value the electricity exported from rooftop solar PV systems. The principle behind it is to consider what costs are avoided by retailers when they purchase electricity from rooftop solar PV instead of from large scale generators in the NEM. Hence a retailer is actually not worse or better off in this sense. A 1:1 FiT rate would lead to a financial loss for retailers because retailers still incur other costs when it uses rooftop solar PV, including the retailers own cost to serve. Similarly, adopting the Hydro Heat tariff would also lead to a financial loss to retailers because they will still incur other costs and may not be able to recover these costs from other sources.

## **6.6 FiT should be used to maintain employment**

One stakeholder considered that the FiT should be set to maintain employment in the solar industry. The Regulator notes promoting employment in Tasmania is a policy issue for the Tasmania Government and does not consider regulatory tools, such as the FiT, are appropriate to use to achieve such objectives. Furthermore, the Regulator considers this to be outside the scope of its Terms of Reference.

## **6.7 Final FiT determination should include installations up to 30kW on three phase connections**

One submission noted that the FiT should apply to installations up to 30kW on three phase connections as opposed to a maximum installed capacity of 10kW noted in the Terms of Reference. The Regulator understands that its Terms of Reference was for a maximum of 10kW on one phase which is equivalent to 30kW on three phases. The Regulator therefore understands that its recommendations will be applied to 30kW three phase systems consistent with the Government’s proposed legislation.

## 6.8 Smart meters and time of use tariffs

In its submission the CEC noted that it supports the staged introduction of smart meters on an 'opt in' basis for Tasmania electricity customers and as a standard feature for households with solar PV systems. Furthermore, the CEC considered that the Tasmanian Government should support the development of a software tool for consumers and distributed generators allowing them to assess the financial impact of switching to time of use tariffs. Whilst the Regulator can appreciate that such tools may assist micro distributed generators, the Regulator considers that these issues are outside the scope of its Terms of Reference.



## 7 RECOMMENDATIONS

This Chapter outlines the Regulator's recommendation as to the rate to be paid by authorised retailers in relation to the regulated FiT for Tasmanian small customers. This includes the recommended formula to be used in calculating the FiT for micro distributed generation systems to apply from 1 January 2014 together with the Regulator's recommended approach to updating the FiT.

### 7.1 Calculating the FiT

Based on the analysis in the previous Chapters, the Regulator considers that the FiT should be calculated as follows:

$$\mathbf{FiT}_y = \mathbf{WEP}_y \times \mathbf{MLF}_y \times \mathbf{DLF}_y + \mathbf{AEMO}_y$$

Where:

**FiT<sub>y</sub>** is the regulated fair and reasonable feed in tariff in c/kWh

**y** is the period

**WEP<sub>y</sub>** is the wholesale electricity price at Table 3 of the relevant Regulated Offer Retailer 2013 Standing Offer Determination, as amended from time to time, expressed in c/kWh.

**MLF<sub>y</sub>** means the load weighted average marginal loss factor at the regional reference node for Tasmania for the relevant period as approved by the Regulator in accordance with the relevant Regulated Offer Retailer 2013 Standing Offer Determination.

**DLF<sub>y</sub>** means the load weighted average distribution loss factor for the relevant period as approved by the Regulator in accordance with the relevant Regulated Offer Retailer 2013 Standing Offer Determination.

**AEMO<sub>y</sub>** means the forecast charge, as billed by AEMO for market participant and ancillary services fees presented in Table 5 of the relevant Regulated Offer Retailer 2013 Standing Offer Determination, as amended from time to time, expressed in c/kWh.

The recommended FiT to apply for the period from 1 January 2014 to 30 June 2014 would be 8.282 c/kWh based on the components specified in Table 7.1.

**Table 7.1: Regulated FiT**

	<b>1 January 2014</b>
Wholesale electricity price (c/kWh)	7.497
multiplied by	x
Marginal loss factor	1.017
multiplied by	x
Distribution loss factor	1.071
plus	+
NEM fees (c/kWh)	0.116
<b>Total FiT (c/kWh)</b>	<b>8.282<sup>48</sup></b>

Source: 2013 Standing Offer Determination for Retailer A.

## 7.2 Updating the FiT

The Regulator considers that the FiT should be updated each time regulated standing offer prices are updated. The Regulator notes that the Terms of Reference requires the 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 the regulated standing offer price. The Regulator considers therefore that updating the FiT when regulated standing offer prices change is consistent with the Terms of Reference.

Consequently the FiT calculated in Table 7.1 will apply from 1 January 2014 until 30 June 2014. The FiT will be updated effective from 1 July 2014 and 1 July 2015 for the 2014-15 and 2015-16 financial years respectively in conjunction with the annual standing offer price approval process referred to in the 2013 Standing Offer Determinations made on 29 July 2013 and as explained in the 2013 Standing Offer Investigation Report published by the Regulator on 30 July 2013.

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<sup>48</sup> The FiT has been calculated to three decimal places consistent with the Regulator's practice with respect to the approval of Aurora's current regulated tariffs.

# ATTACHMENT A: TERMS OF REFERENCE

## A Fair and Reasonable Feed-in Tariff for Tasmanian Small Customers

### Terms of Reference

As the Minister for Finance, pursuant to section 9 of the Electricity Supply Industry Act 1995, I hereby require the Tasmanian Economic Regulator to complete a report investigating and recommending to the Government a 'fair and reasonable' value that should be placed on net 'exported' electricity that is fed into the Tasmanian electricity network by residential and small business customers who:

- have a grid-connected renewable generation system, up to a maximum total installed capacity of 10kW;
- consume less than 150MWh per annum; and
- are located on mainland Tasmania (including Bruny Island).

#### 1) Matters to be considered

In investigating and reporting on the fair and reasonable value of electricity exports from these customers, the Regulator is to take into account:

- the net financial benefits to retailers of exported electricity with respect to retailers' controllable costs, including, but not limited to:
  - the price that the retailer pays for wholesale electricity; and
  - the costs a retailer incurs in running its retail electricity business;
- consistency with the operation of a competitive Tasmanian retail electricity market;
- the principle that feed-in tariffs should not result in any cross-subsidies between customers or customer classes;
- the Commonwealth Government's current carbon pricing arrangements;
- the Council of Australian Governments' National Principles for Feed-in Tariff Arrangements and the concept of 'fair and reasonable' value reflected therein;
- approaches, methodologies, findings and/or recommendations from other jurisdictions the Regulator considers relevant; and
- any other matter the Regulator considers relevant.

The Regulator is also to consider and report on, where it considers it relevant or appropriate:

- any material costs and benefits of micro distributed generation to the Tasmanian transmission and/or distribution networks;
- any other material direct or indirect costs or benefits of micro distributed generation; and
- how any such material costs or benefits identified by the Regulator would be most appropriately captured (for example the potential for different feed-in tariff arrangements based on generation technology/or grid location).

## **2) Consultation**

The Regulator must undertake such consultation as is considered appropriate.

## **3) Timing**

The Regulator is to complete its investigation and produce its report as soon as is practicable, and no later than by 31 October 2013.

# 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 generation<sup>49</sup> 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*

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<sup>49</sup> 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: SUMMARY OF SUBMISSIONS

Submission received from	Key Issues
Jeff Jennings	<ul style="list-style-type: none"> <li>▪ Considers the beneficial impact to the environment that is produced by solar electricity should be included.</li> <li>▪ Considers that solar electricity producers should be allowed to charge a fixed fee to pay for the cost of their infrastructure.</li> </ul>
Save our Solar Tasmania	<ul style="list-style-type: none"> <li>▪ Considers less reliance should be put on other jurisdictions reviews given the different circumstances in Tasmania. Notes that in Tasmania there to be the absence of a burden of government debt from previous premium FiT arrangements as exists in some other Australia states and notes that the single wholesale generator in Tasmania and the use of hydro power in Tasmania that can be stored unlike coal that must constantly operate.</li> <li>▪ Considers that Tasmania can lead the country with solar rather than follow and notes the viability of solar with reference to plans for large scale solar farms.</li> <li>▪ Considers that the COAG national principles for Feed-in Tariffs are purely a guide and have not been written considering Tasmania’s unique circumstances.</li> <li>▪ Considers that the avoided costs of transmission that are shared among network users to be a cross subsidy against solar users and not fair and reasonable. Notes that whilst these cost are not avoided by retailer’s, they are avoided by the distributor and that there is a clear and easy system for payments to be made to PV rooftop owners in the form of an increased FiT.</li> <li>▪ Requests the Regulator to ask Aurora Distribution to investigate the amount of this avoided cost taking into account that power from rooftop solar is already refined and does not need processing and uses very little of the transmission and distribution infrastructure.</li> <li>▪ Proposes that, in considering a fair and reasonable tariff, in the same way that the level of the FiT should not result in a the price of power rising so that non PV owners are paying for the cost of a FiT, the price of power should not be such that it is reduced via a subsidy from the fact that avoided costs are not being attributed to the source in which they are derived (roof top solar PV owners).</li> <li>▪ Considers that a portion of the FiT should reflect the investment made to the infrastructure of the power system. Notes that an increased take up of solar provides the opportunity to invest in a second Basslink interconnecting cable and for Hydro to export further electricity to mainland Australia. Considers that given hydro power can be stored, increased uptake of solar can save hydro power for use during peak times on mainland Australia.</li> <li>▪ Considers that solar PV does not adversely impact on the frequency control of grid as long as the inverter controller is well tuned.</li> <li>▪ Proposes a revised FiT formula that includes avoided network costs.</li> </ul>

Submission received from	Key Issues
Dr Andrew E. Fluck	<ul style="list-style-type: none"> <li>▪ Considers the Regulator should consider solar PV owners as prosumers, a distinct category from wholesalers and small retail customers.</li> <li>▪ Considers that under the Regulator's draft proposal prosumers would be paying for distribution costs twice, once as a consumer and secondly in terms of a lower FiT rate.</li> <li>▪ Considers the investment by prosumers of rooftop solar PV has contributed to profits generated from increased exports over Basslink at a premium rate and thus prosumers contribute an unacknowledged public good.</li> <li>▪ Considers the use of the WEP in the FiT calculation to be inappropriate because domestic solar-PV installations fall outside the concept of wholesale generation.</li> <li>▪ Considers the FiT should remain pegged to the price paid per unit by the prosumer.</li> </ul>
Graham Kefford and Dyan Cameron	<ul style="list-style-type: none"> <li>▪ Considers the Regulator's proposal would lead to additional profits to retailer's and others as the expense of rooftop solar PV owners.</li> <li>▪ Considers the distribution cost of rooftop solar PV to be minimal because it travels only short distances.</li> <li>▪ Notes that power produced from rooftop solar PV is ready to use and does not need transmission costs such as transformers, high voltage lines or maintenance.</li> <li>▪ Considers that Tasmania's 1:1 FiT was not a premium FiT compared to other states and this should be kept in mind when setting the new FiT.</li> <li>▪ Considers the FiT should be set to maintain employment within solar installation companies.</li> <li>▪ Considers the FiT should recover the cost of repairs and replacement of rooftop solar PV systems.</li> <li>▪ Considers the FiT rate should be equal to the HydroHeat tariff 42.</li> </ul>
Save Solar Tasmania and Alternative Technology Association	<ul style="list-style-type: none"> <li>▪ Considers that the terms of reference provided to the Regulator to be based on inadequate criteria and should have focussed on the long term benefit to consumers.</li> <li>▪ The Regulator should calculate and make available information about a market based price using Tasmanian specific information about spot prices in the NEM.</li> <li>▪ The FiT should include an allowance for any avoided transmission and distribution costs.</li> <li>▪ Further research should be undertaken on the indirect benefits and other impacts of distributed generation in Tasmania for consideration in future FiT determinations.</li> <li>▪ Considers full public consultation should be part of future FiT determinations.</li> <li>▪ Considers the final FiT determination should include installations up to 30kW on three phase connections, consistent with legislation passed on 19 September 2013.</li> <li>▪ The Regulator should work with Aurora to identify locations in which a higher FiT based on location and time of generation would provide cost savings to the transmission and distribution network and hence all consumers.</li> <li>▪ The Regulator should make recommendations on a voluntary time of generation FiT to support installations that provide net benefit to the electricity system by generating at time of maximum demand and higher wholesale prices.</li> </ul>

Submission received from	Key Issues
Clean Energy Council	<ul style="list-style-type: none"> <li data-bbox="705 360 1401 607">▪ Considers the FiT should be set to maximise the overall benefits to the electricity industry including reduced average wholesale electricity prices, peak prices, transmission losses, deferment or avoidance of investment in network augmentation and contributing to network management and stability. Considers FiTs have not been set to provide incentives for micro generators that would lead to these benefits. Supports time of use FiT in addressing peak demand, through facing solar panels west and storage.</li> <li data-bbox="705 618 1401 752">▪ The FiT should be based on the system-wide economic benefits of distributed generation and storage and not the financial benefits of the retailer. It should provide an efficient price signal to investors that will help achieve efficient use of distributed generation in a competitive electricity industry.</li> <li data-bbox="705 763 1401 842">▪ Supports the staged introduction of smart meters on an 'opt in' basis for Tasmania electricity customers and as a standard feature for households with solar PV systems.</li> <li data-bbox="705 853 1401 987">▪ Considers benefit-reflective FiT will spread electricity load more evenly and this will improve network utilisation, manage growth in peak demand and avoid spending millions of dollars on asset augmentation that customers would ultimately have paid for through their bills.</li> <li data-bbox="705 999 1401 1111">▪ To maximise the economic benefits of distributed generation and storage, considers the FiT should be technology-neutral, available to mid-scale systems, time-varying, location-specific and mandated by regulation.</li> <li data-bbox="705 1122 1401 1234">▪ Considers the Tasmanian Government should support the development of a software tool for consumers and distributed generators allowing them to assess the financial impact of switching to time-of-use tariffs.</li> <li data-bbox="705 1245 1401 1491">▪ Notes that in the near future affordable and reliable battery storage will give customers the option of removing themselves from the grid which it considers does not maximise overall economic benefit. Considers the FiT should be set to allow distributed generators to compete on fair terms during critical peak periods when the spot price is high. Considers by opening up competition to power during critical peak periods, the financial savings in poles and wires investment will be maximised.</li> <li data-bbox="705 1503 1401 1615">▪ Considers the Regulator should support a policy of allowing the grid-connection and operation of distributed generation in order to ensure fair conditions for competition in electricity supply.</li> <li data-bbox="705 1626 1401 1816">▪ Considers regulatory, technical and economic challenges of a new era of electricity generation and consumption must change in step with consumers expectations. Considers defensive actions by networks, such as preventing export, fail to deal with this evolution and that with falling technology costs, networks will gradually decline in value creating a significant economic burden.</li> <li data-bbox="705 1827 1401 2040">▪ Notes that the CEC is working with distribution businesses, government, research bodies, regulators, rule makers and market operators to develop a strategic vision to address these concerns. Suggest the Regulator and the Tasmanian Government should support measures that address the challenges that are impending as part of the on-going development of the consumer-driven evolution of the electricity supply system.</li> </ul>

Submission received from	Key Issues
Clean Energy Council - continued	<ul style="list-style-type: none"> <li data-bbox="592 344 1302 658">▪ Considers that the role of the State as owner and operator of Tasmania’s distribution businesses has the potential to conflict with its roles as policy maker in respect of the Tasmania electricity sector. Notes that competition by distributed generation and storage for supply of power at critical peak periods could reduce the likely sale price of the Aurora customer base or the price receive for Tasmania’s distribution networks, if they are ultimately privatised. Considers that policies should be made with a view to the long term economic benefit of all Tasmanians and not the short term financial interests of the distribution businesses.</li> <li data-bbox="592 658 1302 808">▪ Considers that the Commonwealth Government’s plan to remove the carbon price means there is a role for state governments in dealing with climate change, including support for the increased uptake of small scale renewable generators.</li> <li data-bbox="592 808 1302 978">▪ Disagrees that the benefit of avoided network investment should accrue to all parties as it does not provide any incentive to defer network augmentation costs. Notes that the price of storage is decreasing and that distributed generation will increasingly be able to assist with peak demand in Tasmania.</li> </ul>

## ATTACHMENT D: SUMMARY OF 2012-13 TASMANIAN SPOT PRICES AND DEMAND

**Table D.1: Summary of Tasmanian spot prices, 10am to 4pm in 2012-13, \$/mWh**

10am to 4pm	Average	Max	Min	Weighted average
July	63.30	2,188.31	27.10	63.31
August	46.19	81.46	31.24	46.48
September	39.68	52.28	29.28	39.89
October	42.95	82.37	22.98	43.15
November	50.48	95.76	32.31	50.64
December	45.82	63.87	14.98	45.99
January	54.16	2,188.83	-21.36	54.35
February	46.54	80.31	36.18	46.56
March	52.55	196.32	28.56	53.06
April	44.96	98.12	30.00	44.96
May	45.26	187.34	12.99	45.49
June	48.08	158.54	-334.24	48.50

**Table D.2: Summary of Tasmanian spot prices, 4pm to 10pm in 2012-13, \$/mWh**

4pm to 10pm	Average	Max	Min	Weighted average
July	63.96	137.75	40.26	64.40
August	49.61	104.34	31.25	50.00
September	41.72	58.15	31.20	41.99
October	44.12	65.63	32.95	44.25
November	51.15	85.59	34.27	51.22
December	46.77	61.48	34.73	47.01
January	49.32	2,184.06	9.51	49.17
February	46.96	145.61	-129.28	46.94
March	52.53	176.95	27.26	52.97
April	46.45	98.12	36.21	46.60
May	50.32	775.95	35.32	50.79
June	53.78	121.19	28.24	54.51

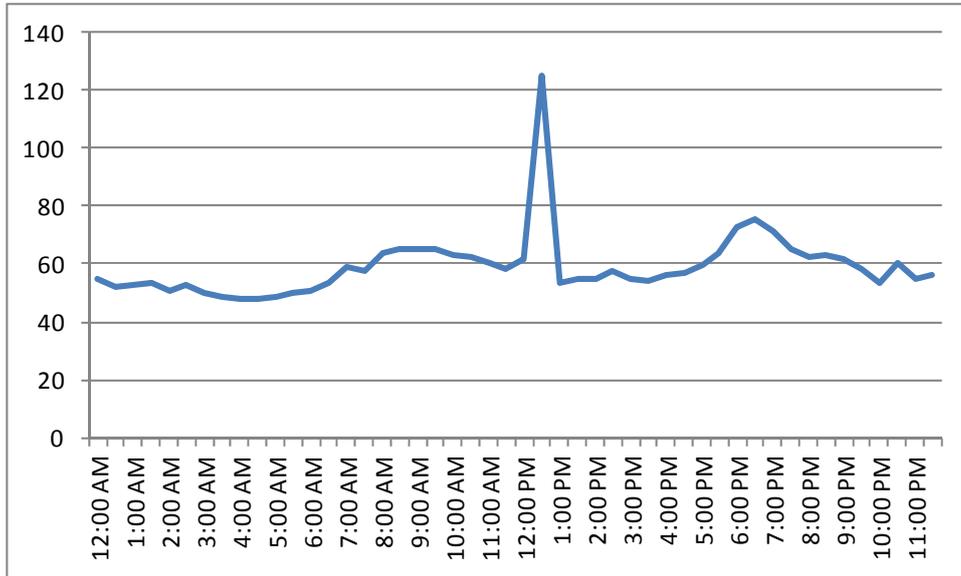
**Table D.3: Summary of Tasmanian spot prices, 10pm to 4am in 2012-13, \$/mWh**

<b>10pm to 4am</b>	<b>Average</b>	<b>Max</b>	<b>Min</b>	<b>Weighted average</b>
July	53.36	107.84	28.10	53.63
August	44.66	80.78	31.26	44.91
September	37.74	57.55	14.39	38.07
October	42.52	83.64	27.03	42.60
November	50.17	67.03	38.95	50.24
December	47.15	61.25	27.12	47.38
January	74.25	2,185.89	34.38	73.95
February	43.81	83.05	36.22	43.83
March	45.37	98.16	26.01	45.69
April	43.14	98.12	36.20	43.17
May	40.37	95.56	18.12	40.56
June	48.10	114.45	28.22	48.76

**Table D.4: Summary of Tasmanian spot prices, 4am to 10am in 2012-13, \$/mWh**

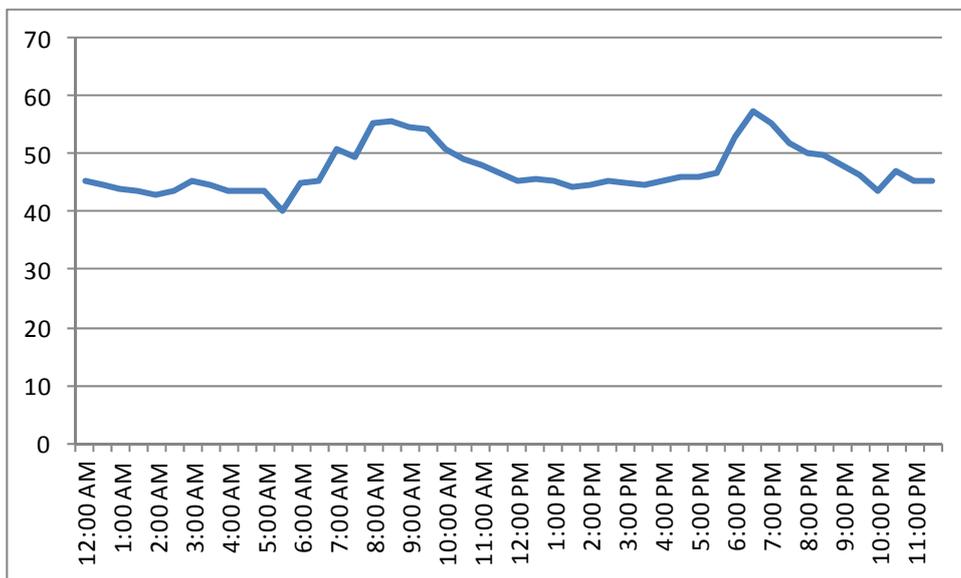
<b>4am to 10am</b>	<b>Average</b>	<b>Max</b>	<b>Min</b>	<b>Weighted average</b>
July	56.28	97.01	27.30	57.75
August	48.41	97.23	-78.23	49.42
September	38.74	52.29	16.43	39.21
October	44.81	94.78	32.14	45.24
November	50.53	75.14	34.44	50.69
December	47.06	110.91	24.89	47.43
January	50.11	2544.07	34.29	50.47
February	45.86	148.49	36.16	46.11
March	48.73	98.16	26.61	49.08
April	45.95	98.13	36.16	45.92
May	42.74	113.30	28.20	43.44
June	49.57	134.45	28.24	51.01

**Figure D.1: Average Tasmania spot prices per half hour, July 2012-13 \$/mWh**



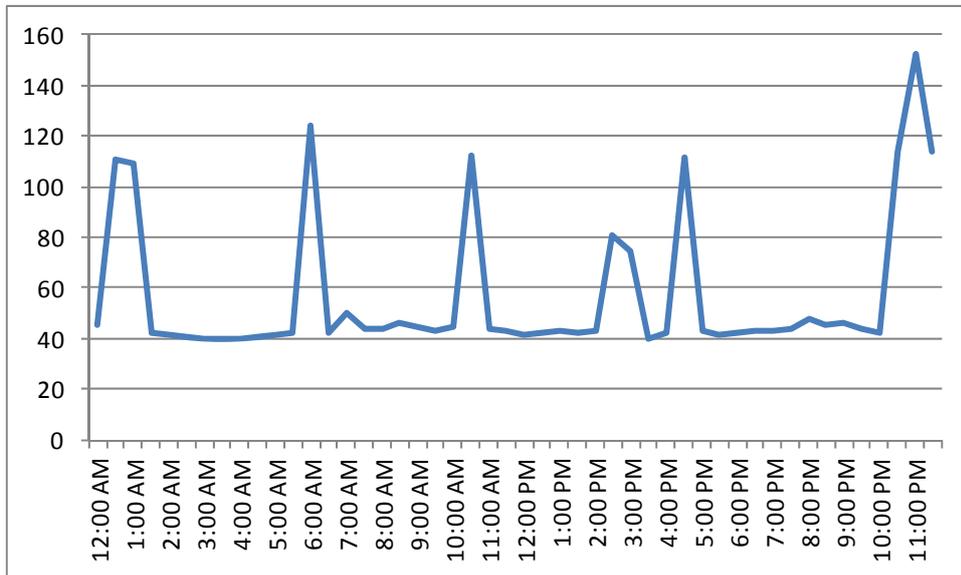
Source: NEM statistics

**Figure D.2: Average Tasmania spot prices per half hour, August 2012-13 \$/mWh**



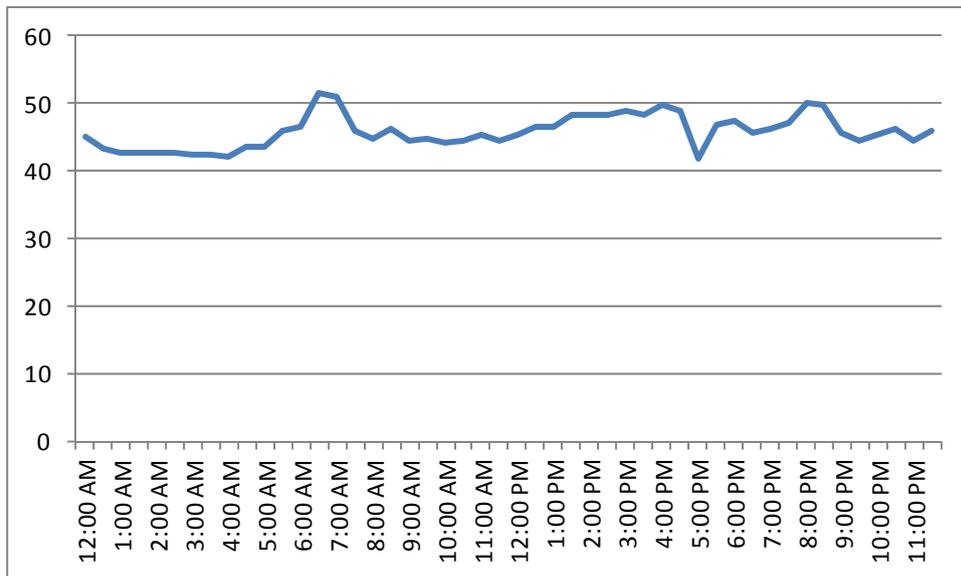
Source: NEM statistics

**Figure D.3: Average Tasmania spot prices per half hour, January 2012-13 \$/mWh**



Source: NEM statistics

**Figure D.4: Average Tasmania spot prices per half hour, February 2012-13 \$/mWh**



Source: NEM statistics