VARIATION TO THE 2012 DETERMINATION OF THE SOLAR FEED-IN TARIFF PREMIUM

Variation Price Determination

Statement of Reasons

June 2013

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The Essential Services Commission of South Australia is the independent economic regulator of the electricity, gas, ports, rail and water industries in South Australia. The Commission's primary objective is the *protection of the long-term interests of South Australian consumers with respect to the price, quality and reliability of essential services*. For more information, please visit www.escosa.sa.gov.au.

TABLE OF CONTENTS

GLOSSARY OF TERMS

ACIL Allen Consulting	ACIL Allen Consulting is the merged entity replacing the separate practices of ACIL Tasman Pty Ltd and the Allen Consulting Group
AEMO	Australian Energy Market Operator
Commission	Essential Services Commission of South Australia
c/kWh	The cost of a unit of electricity expressed in cents per kilowatt hour
CEC	Clean Energy Council
Electricity Act	Electricity Act 1996
ESC Act	Essential Services Commission Act 2002
ESCOSA	Essential Services Commission of South Australia
FiT	Feed-in Tariff
FRC	Full Retail Contestability
IPART	Independent Pricing and Regulatory Tribunal of New South Wales
kWh	Kilowatt Hour
LRET	Large-scale Renewable Energy Target
MW	Megawatt
MWh	Megawatt Hour
NEM	National Electricity Market
NSLP	Net System Load Profile
PV	Photovoltaic
QCA	Queensland Competition Authority
REES	Residential Energy Efficiency Scheme

RRN	Regional Reference Node
SRES	Small-scale Renewable Energy Scheme
RET	Renewable Energy Target

SUMMARY

The Essential Services Commission of South Australia (the Commission) has varied the initial (and current) determination of the electricity solar feed-in tariff (FiT) premium which was issued in January 2012. This document outlines the Commission's statement of reasons for varying the original determination.

All small customers with eligible photovoltaic (PV) generators are entitled to receive an amount (the FiT premium) as determined by the Commission and payable by electricity retailers. The amount determined by the Commission reflects the fair and reasonable value to a retailer of electricity fed into the network and all retailers selling electricity to small customers eligible to receive the FiT premium are required to credit the amount.

The Commission's FiT premium determination, which commenced on 27 January 2012, is scheduled to expire on 30 June 2014. The Commission's variation to the 2012 Determination specifies that:

- the value of the FiT premium to apply from 1 July 2013 will remain at the current value of 9.8 cents per kWh, in lieu of the previously determined 11.2 cents per kWh. This variation to the determination reflects the reduction in the value of wholesale electricity and, hence, the value of energy exported by PV generators, relative to the value that was forecast under the Commission's 2012 FiT premium determination.
- the determination will end on 31 December 2013, rather than the original specified termination date of 30 June 2014.

The Commission's 2012 FiT premium determination was based on information that indicated that wholesale electricity costs would be higher than those currently available. Demand for electricity is lower than that forecast in 2012 and this has translated into lower wholesale electricity costs. The variation to the FiT Premium amount that will apply from 1 July 2013 was therefore implemented by the Commission in order to ensure that the amount remains reflective of the fair and reasonable value of electricity produced by PV generators. The FiT Premium that results from this Determination is around 12.5% lower than the amount that would have applied from 1 July 2013 had the original determination continued unchanged.

The 9.8 cents per kWh FiT Premium represents the minimum amount that must be made available by electricity retailers to PV customers from 1 July 2013 to 31 December 2013. Retailers may voluntarily pass on a higher amount as part of their unregulated market offers. The FiT Premium applies in addition to the 44 cents per kWh (for pre-October 2011 eligible PV installations) and 16 cents per kWh (for post-October 2011 eligible PV installations) payable by SA Power Networks under the FiT scheme.

The Commission's decision to shorten the term of the FiT Premium Determination has been made having regard to submissions that called for a review of the ongoing need for

regulation of the FiT Premium. The Commission will be conducting such a review during the second half of 2013, with the outcome of that review (either continued regulation or some form or deregulation) to apply from 1 January 2014. The Commission has released an Issues Paper on this matter for public consultation and all interested parties are invited to make submissions to that Paper.

PART A – STATEMENT OF REASONS

1. INTRODUCTION

1.1 Overview

The Essential Services Commission of South Australia (the Commission), using powers conferred to it under the Electricity Act 1996 and the *Essential Services Commission Act 2002* (ESC Act), has the role of setting the minimum amounts payable by energy retailers for the feeding in of electricity to the distribution network by eligible solar photovoltaic (PV) systems.[1] In making such a determination, the Commission is required to have regard to the "fair and reasonable" value to retailers of the electricity fed in to the electricity network.[2]

The Commission made its initial determination of the feed-in tariff (FiT) premium in January 2012. That determination set the amount to apply from 27 January 2012, and the amounts to apply during the 2012/13 and 2013/14 financial years, as set out in Table 1.1.

Table 1.1: January 2012 Determination of Feed-in Tariff Premium (nominal cents per kWh and GST exclusive)

	2011/12	2012/13	2013/14
	APPLICABLE FROM 27 JANUARY 2012 TO 30 JUNE 2012	APPLICABLE FROM 1 JULY 2012 TO 30 JUNE 2013	APPLICABLE FROM 1 JULY 2013 TO 30 JUNE 2014
Prescribed Amount	7.1	9.8	11.2

The Commission's determination was based on estimating the volume of energy that retailers did not need to purchase from the wholesale electricity market as a result of the energy being fed into the network by eligible PV systems. The wholesale electricity spot price (weighted by the Net System Load Profile (NSLP)) was used to determine the value of avoided wholesale market acquisitions.[3]

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1 Pursuant to Division 3AB of the Electricity Act 1996 (Electricity Act).

2 The Commission notes that the FiT premium is distinct from the feed-in tariff that SA Power Networks is required to credit to customers who install eligible solar PV generators. This tariff (which was initially set at 44 cents per kWh for new installations and is currently set at 16 cents per kWh for new installations) is being phased out for new customers over the next two years.

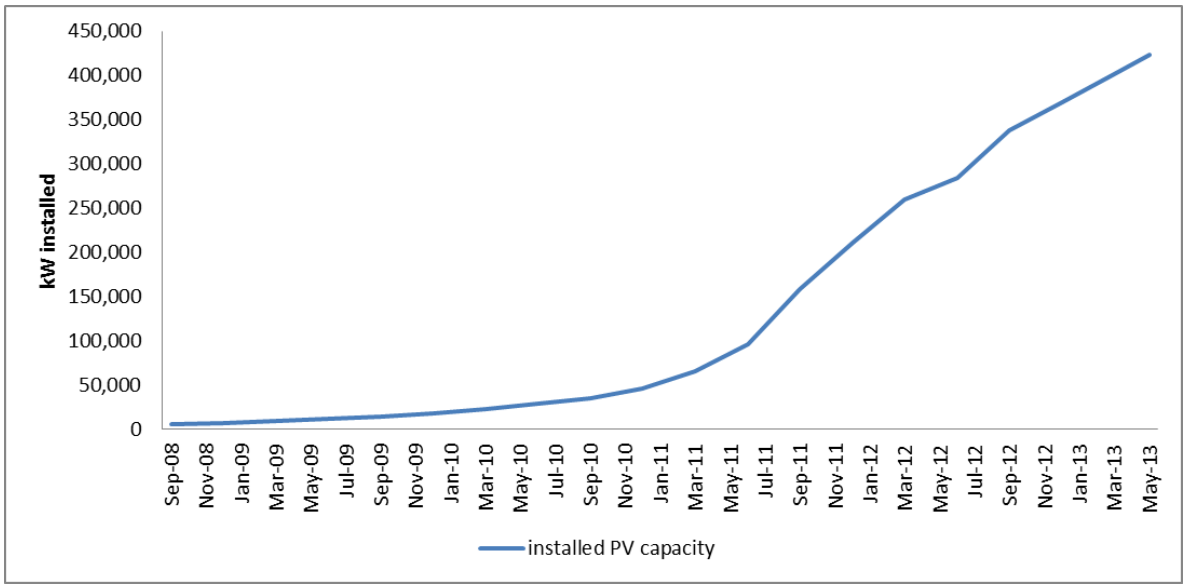
3 For a complete description of the methodology for setting the FiT premium, refer to the Commission's *2012 Determination of Solar Feed-in Tariff Premium: Final Price Determination*, January 2012 (available at http://www.escosa.sa.gov.au/library/120125-SolarFeedinTariffPremium-FinalDecision.pdf).

1.2 Background and key issues

Since the Commission's January 2012 Final Determination of the FiT premium, the wholesale electricity price has not grown as predicted at the time of the 2012 determination; instead it has declined substantially. This fall in the wholesale electricity price is primarily due to electricity demand being lower than initially forecast (and as confirmed by the Australian Energy Market Operator (AEMO) in its latest demand forecasts[4] published in mid-2012 subsequent to the Commission's original determination).

Lower electricity demand can be explained partially through greater PV uptake and PV generation. The following figure, prepared by ACIL Allen Consulting from data supplied by SA Power Networks, shows a rapid increase in customer PV connections since around early 2010, off a low base in the early years of the scheme. In particular, it should be noted that there was a substantial increase in the numbers of connections and the capacity of solar PV installations over the past 12 months, since the last FiT determination.

Figure 1: Approved Solar PV capacity in South Australia (Small Customers)



As at 31 May 2013, SA Power Networks estimated that there were around 140,113 premises with solar PV installations with a total approved capacity of approximately 423MW. It should also be noted that there are a further 19,000 approvals pending.

Further, lower demand for electricity has direct implications for the fair and reasonable value to a retailer of exported PV output and the Commission's determination of the minimum FiT premium. If not adjusted, the current FiT premium would materially

[4] AEMO, 2012, *National Electricity Forecasting Report*- Chapter 6, South Australia Forecasts, 29 June 2012, p6-1, available at: http://www.aemo.com.au/Electricity/Planning/Forecasting/National-Electricity-Forecasting-Report-2012

overstate the value of wholesale electricity and energy retailers would be required to pay a minimum FiT premium that is higher than it ought to be. The Commission is of the view that it is in the long-term interests of consumers to ensure that the FiT premium is reflective of the value of wholesale energy to a retailer.

The Commission's Variation to the 2012 Determination of Solar FiT Premium was preceded by a review of the wholesale electricity cost component of the standing contract price of electricity.[5] During that review, the Commission proposed a reduction in the electricity standing contract price to reflect lower wholesale electricity costs than forecast in 2010. It also indicated its intention to review the FiT Premium given the observed reductions in wholesale electricity costs. .

On 18 December 2012, the Government announced that electricity prices would be deregulated from 1 February 2013. As a result, the Commission suspended its wholesale electricity cost review and postponed its review of the FiT premium.

On 1 February 2013, retail price deregulation in South Australia was introduced. While the Commission's role in setting regulated electricity and gas standing contract prices ceased on that date, its role in regulating the FiT premium remained.

In March 2013, the Commission made a Draft Price Determination that proposed a change to the FiT Premium to apply from 1 July 2013. Whereas the 2012 Determination of the FiT Premium would have resulted in the FiT Premium increasing on 1 July 2013 from the current 9.8 cents per kWh to 11.2 cents per kWh, the Commission proposed to keep the FiT premium constant at 9.8 cents per kWh until 31 December 2013 in light of the previously collected evidence that the wholesale cost of electricity had fallen. A key input into the derivation of the proposed FiT Premium was the Australian Energy Market Operator's forecasts of electricity demand, released in June 2012. Those forecasts are expected to be updated by AEMO in July 2013.

1.3 Process for review

The Commission released the Draft Price Determination for a 4-week period of public consultation. Submissions to the Draft Price Determination were due by **22 April 2013**. The Commission invited interested parties to make submissions to its Draft Price Determination both in relation to the proposed methodology for setting the FiT Premium (discussed in Chapter 3) and the quantum of the FiT premium to apply from 1 July 2013 to 31 December 2013. The Commission's reasons were set out in Part A of the Draft Determination. The proposed legal instrument to give effect to the Price Determination was set out in Part B.

The Commission received six public submissions in response to its Draft Determination, from:

[5] All publications associated with the 2012 wholesale electricity cost review are available on the Commission's website at http://www.escosa.sa.gov.au/projects/178/electricity-standing-contract-wholesale-electricity-costs.aspx.

- AGL Energy Ltd (AGL);
- Origin Energy Ltd (Origin Energy);
- Clean Energy Council (CEC);
- EnergyAustralia;
- Private Individual 1; and
- Private Individual 2.

These submissions can be accessed on the Commission's website.[6] The Commission has considered all submissions in making this Variation Price Determination. Issues raised in the submissions are considered in detail in Chapter 4.

As outlined in its Draft Determination, the Commission engaged an independent consultant, ACIL Allen, to provide expert advice in relation to the value to retailers of solar PV exports. ACIL Allen provided two reports: one that details the proposed methodology and one that updates the value of the FiT premium for 2013/14. ACIL Allen's reports are available on the Commission's website.[7]

[6] http://www.escosa.sa.gov.au/projects/195/2013-determination-of-solar-feed-in-tariff-premium.aspx#stage-list=1

[7] http://www.escosa.sa.gov.au/projects/195/2013-determination-of-solar-feed-in-tariff-premium.aspx#stage-list=0

2. REGULATORY FRAMEWORK

2.1 Power to determine the FiT premium

Pursuant to section 35A(1)(ba) of the Electricity Act 1996, the Commission is given the power to make a price determination (under Part 3 of the Essential Services Commission Act 2002) regulating prices, conditions relating to prices and price-fixing factors for the feeding-in of electricity into a distribution network under Division 3AB of the Electricity Act.

The initial FiT premium determination made in January 2012, was governed by transitional provisions of the Electricity (Miscellaneous) Amendment Act 2011. In particular, clause 4 of the transitional provisions provided that:

*(1) The Commission **must**, after the commencement of this clause, make an **initial determination** in relation to the credits payable by a retailer for the feeding-in of electricity into a distribution network under section 36AD of the Electricity Act 1996…*

*(2) Despite the amendments effected by section 6 of this Act and the provisions of the Essential Services Commission Act 2002, an **initial determination**-*

*(a) **will be made** after the Commission has adopted such processes as the Commission thinks fit; and*

(b) may be based on such principles, policies and other factors as the Commission thinks appropriate; and

(c) will be made by the Commission by notice in the gazette; and

(d) will be binding on the electricity entities to which it is expressed to apply; and

(e) must be made within 6 months from the commencement of this clause.

(emphasis added)

The transitional provisions required the Commission to make an initial determination. Those provisions do not apply to the Commission's subsequent determination – although they would apply were the initial determination to be varied.

Section 35A(1) of the Electricity Act states that:

*(1) The Commission **may** make a determination under the Essential Services Commission Act 2002 regulating prices, conditions relating to prices and price-fixing factors for—*

(a) the sale and supply of electricity to small customers;

(ba) the feeding-in of electricity into a distribution network under Division 3AB;

(c) subject to the National Electricity (South Australia) Law and the National Electricity Rules—network services;

(d) other goods and services in the electricity supply industry specified by the Minister by notice in the Gazette.

(emphasis added)

Note that the Electricity Act states that the Commission "may" make a FiT premium determination under Division 3AB (Division 3AB sets out the requirements on SA Power Networks to pay the statutory FiT and retailers to pay the FiT premium). This provides some discretion to the Commission as to whether or not it should set the FiT premium following the initial FiT premium determination, which the Commission was required to make.

Section 35A(2a) of the Electricity Act also provides that:

(2a) in addition to the requirements of section 25(4) of the ESC Act, the Commission must, in acting under subsection (1)(ba), have regard to the fair and reasonable value to a retailer of the electricity fed into the network by qualifying customers within the meaning of Division 3AB.

This is a key matter for any FiT premium determination, although it only has effect should the Commission elect to make such a determination.

2.2 The feed-in scheme as set out in the Electricity Act

The key provisions of the South Australian feed-in scheme are set out in Division 3AB of the Electricity Act.

As has been the case since the scheme was first introduced in 2008, SA Power Networks will continue to be obliged, as a condition of its electricity distribution licence, to:

- permit those of its customers who qualify under the terms of the feed-in scheme to feed electricity generated by those customers' PV generation units into its electricity distribution network; and
- credit against the charges payable by a qualifying customer for the supply of electricity the feed-in price for electricity fed into the network in excess of the electricity used by the qualifying customers.

The amounts that SA Power Networks is required to credit to customers are dependent upon the date on which a customer connected their PV generation unit to SA Power Networks' distribution network.

Any customer that connected their PV generation unit prior to 1 October 2011, will continue to qualify for a credit from SA Power Networks of 44 cents per kWh of electricity

fed into the network. Those customers will receive that credited amount until 30 June 2028. Any customer that connected (or connects) a PV generation unit between 1 October 2011 and 30 September 2013 will receive a credit from SA Power Networks of 16 cents per kWh of electricity fed into the network. Those customers will be entitled to that credited amount until 30 September 2016. Finally, customers that connect PV generation units after 30 September 2013 will not be eligible for any feed-in credit from SA Power Networks.

In addition to the amount to be credited by SA Power Networks under the feed-in scheme, an obligation has been placed on electricity retailers to credit against the charges incurred by a PV customer for the sale of electricity a "prescribed amount" (defined in this Draft Determination as the FiT premium) for electricity fed into the distribution network. This obligation on retailers is discussed in more detail below.

2.2.1 Obligation on electricity retailers

The "prescribed amount" is defined in Division 3AB of the Electricity Act as the amount determined for the purposes of Division 3AB by the Commission. This requires that the Commission must determine the "amount" as a unit of currency to be credited to qualifying PV customers when relevant. In other words, the prescribed amount must be an amount that is ascertainable or absolute. The Commission cannot, for example, only determine a range of amounts.

It is important to note that the amount determined by the Commission as the "prescribed amount" is only a minimum amount to be credited to qualifying solar customers by retailers for electricity fed back into the distribution network. Retailers are in no way constrained from paying a greater amount to qualifying PV customers should they consider it appropriate to do so. Furthermore, the prescribed amount will be payable to all customers with eligible PV generation units, irrespective of the date of connection or the contract they may have entered into with an electricity retailer for the sale of electricity through their connection point.

The obligation, which is set out in section 36AD(1) of the Electricity Act[8], is reproduced below.

> ***36AD—Feeding electricity into networks – requirements on holder of licence authorising retailing***
>
> *(1) It is a condition of the licence of the electricity entity that has the relevant contract to sell electricity as a retailer to a qualifying customer who feeds electricity generated by a qualifying generator into a distribution network, other than an excluded network, that the retailer will after*

[8] Section 36AD will commence on the date that the Commission makes the FiT premium determination in accordance with the Electricity Act.

taking into account any requirement prescribed by the regulations-

(a) credit against the charges payable by the qualifying customer for the sale of electricity to the qualifying customer the prescribed amount, or an amount determined by the retailer, being an amount greater than the prescribed amount, for electricity fed into the network in excess of the electricity used by the qualifying customer….;

The effect of section 36AD(1)(a), which applies to retailers under the new National Electricity Retail Law[9], is that an electricity retailer will be obliged to pay the prescribed amount (or an amount greater than the prescribed amount) immediately upon:

- entering into a contract with a qualifying customer[10] who feeds electricity generated by a qualifying generator[11] into a distribution network[12]; and
- an existing customer starting to feed-in electricity generated by a qualifying generator into the distribution network (this will be the case even if the sale contract between the retailer and the existing customer does not deal with the issue of fed-in electricity).

2.2.2 Summary of amounts payable under the feed-in scheme

Table 2.1 below summarises the feed-in payment amounts that will be payable under the feed-in scheme set out in Division 3AB of the Electricity Act.

Table 2.1: Amounts payable under the amended feed-in scheme

SOLAR PV CELL INSTALLATION/ APPROVAL DATE	CREDIT AMOUNT	PERIOD PAYABLE
Before 1 October 2011	FiT premium* + 44c/kWh	▲ FiT premium*: ongoing ▲ 44c/kWh: until 30 June 2028
1 October 2011 to 30 September 2013	FiT premium* + 16c/kWh	▲ FiT premium*: ongoing ▲ 16c/kWh: until 30 September 2016

9 See section 14E(2) of the Electricity Act 1996.

10 A qualifying customer is a customer who consumes less than 160MWh of electricity per annum.

11 A qualifying generator is a small photovoltaic generator that is operated by a qualifying customer, complies with Australian Standard AS 4777, is connected to an electricity distribution network which supplies electricity to more than 10,000 customers, allows generated electricity to be fed into the distribution network and have installed appropriate metering so as to allow the separate recording of electricity imports and exports at the person's connection point.

12 A distribution network is defined in the Act as one which supplies electricity to more than 10,000 domestic customers.

From 1 October 2013	FiT premium*	▲ FiT premium*: Ongoing*

**As determined by the Commission.*

2.3 The Commission and the Essential Services Commission Act

The Commission is a statutory authority, established under the ESC Act as a general economic regulator of essential services in South Australia, including the essential service of electricity supply. Section 5 of that Act provides the Commission with its statutory functions:

5—Functions

The Commission has the following functions:

(a) to regulate prices and perform licensing and other functions under relevant industry regulation Acts;

(b) to monitor and enforce compliance with and promote improvement in standards and conditions of service and supply under relevant industry regulation Acts;

(c) to make, monitor the operation of, and review from time to time, codes and rules relating to the conduct or operations of a regulated industry or regulated entities;

(d) to provide and require consumer consultation processes in regulated industries and to assist consumers and others with information and other services;

(e) to advise the Minister on matters relating to the economic regulation of regulated industries, including reliability issues and service standards;

(f) to advise the Minister on any matter referred by the Minister;

(g) to administer this Act;

(h) to perform functions assigned to the Commission under this or any other Act;

(i) in appropriate cases, to prosecute offences against this Act or a relevant industry regulation Act.

In the performance of those functions, the Commission is required to meet the statutory objectives set out for it at section 6 of the ESC Act, which includes a paramount statutory objective:

6—Objectives

In performing the Commission's functions, the Commission must—

(a) have as its primary objective protection of the long term interests of South Australian consumers with respect to the price, quality and reliability of essential services; and

(b) at the same time, have regard to the need to—

(i) promote competitive and fair market conduct; and

(ii) prevent misuse of monopoly or market power; and

(iii) facilitate entry into relevant markets; and

(iv) promote economic efficiency; and

(v) ensure consumers benefit from competition and efficiency; and

(vi) facilitate maintenance of the financial viability of regulated industries and the incentive for long term investment; and

(vii) promote consistency in regulation with other jurisdictions.

In summary, section 5(a) of the ESC Act confers a price regulation role on the Commission and section 6 requires that, in undertaking that role, the Commission is to have, as its primary objective, the protection of the long term interests of South Australian consumers on the terms set out in section 6(a). The Commission is also required to have regard to the need to take into account the factors stipulated in section 6(b) of the ESC Act when making a determination. The ESC Act does not specify the weight which each of the factors stipulated in section 6(b) must be given as this is a matter left to the discretion of the Commission.

In addition, section 25(4) of the ESC Act provides that, in making a price determination, the Commission must, in addition to having regard to the general factors specified in section 6 of the ESC Act, have regard to:

(a) the particular circumstances of the regulated industry and the goods and services for which the determination is being made;

(b) the costs of making, producing or supplying the goods or services;

(c) the costs of complying with laws or regulatory requirements;

(d) the return on assets in the regulated industry;

(e) any relevant interstate and international benchmarks for prices, costs and return on assets in comparable industries;

(f) the financial implications of the determination;

(g) any factors specified by a relevant industry regulation Act or by regulation under this Act;

(h) any other factors that the Commission considers relevant.

These objectives and factors must guide the Commission's FiT premium determination.

3. DETERMINING A VALUE FOR PV EXPORTS

3.1 Issues raised in submissions

In making this Variation Price Determination, the Commission has had regard to submissions from all interested stakeholders. While the Commission has not adopted all positions put forward in submissions, the submissions have been helpful in assisting the Commission's identification and consideration of the relevant issues and this has enabled the Commission to gain a comprehensive understanding of the views held within the community.

Where appropriate, the Commission has acknowledged, either by direct quotation or by reference to themes or points of view, certain arguments and submissions in the text to assist stakeholders in understanding the positions it has reached. However, failure to reference an argument or submission does not mean that the Commission has not taken that argument or submission into account in its deliberations.

3.2 Overview of the methodology

As discussed in detail in the 2012 FiT Premium Determination (and Chapter 2), the Electricity Act requires the Commission to have regard to the "fair and reasonable" value to a retailer of the electricity fed into the electricity network. Accordingly, the Commission has sought to quantify the net benefits to a retailer of the electricity exported from eligible PV generators.

The Commission considered that there are three major sources of value to a retailer of exported PV output. First, electricity retailers buy electricity at the wholesale level and sell it to small customers.[13] When retailers receive exported PV energy output, the amount of electricity they must buy on the wholesale electricity market is reduced. This is the most significant impact that exported PV output has on retailers. Second, exported PV output also provides value to a retailer by avoiding network losses involved in delivering electricity from remote generation sources. Third, and finally, exported PV output allows retailers to avoid NEM fees and costs associated with the provision of ancillary services in the NEM.

In its 2012 Determination of the FiT Premium, a number of other factors were considered by the Commission as possible contributors to the value to a retailer of exported PV output. Those other factors were:

- the impact of hedge contracts;

[13] Retailers also supply large customers but they are not eligible for the feed-in payments which are limited to small customers and are thus not relevant to this analysis. However, large customers are free to negotiate with retailers a FiT premium specific to their circumstances.

- changes in retailers contract position;
- retailer operating costs;
- 'green schemes';
- the impact on the wholesale price of electricity;
- the impact on network loss factors.

The Commission, after carefully considering each of those factors, formed the position that those factors may provide benefit to retailers collectively or to other parties but do not provide value to the PV customers' 'own' retailer. Hence, the Commission decided to exclude those factors from its assessment of the fair and reasonable value to a retailer of exported PV output.

The 2012 FiT Premium Determination also discussed the Commission's view that the value to a retailer of exported PV output consisted of:

- the wholesale spot price of electricity;
- *weighted by* the net system load profile;
- *adjusted for* distribution losses;
- *adjusted for* market and ancillary service fees.

Therefore, to derive the value to a retailer of exported PV output, projections of each of these parameters will be required.

3.3 Specific details of the FiT methodology

Details of the methodology used to determine the value of PV output is contained in the methodology report, prepared by ACIL Allen on behalf of the Commission.[14] In summary, that methodology involves:

- Forecasting the wholesale spot price of electricity, based on electricity demand forecasts (energy and peak demand) published by AEMO and using ACIL Allen's *PowerMark* national electricity market model.
- Projecting the Net System Load Profile (NSLP) for South Australia, based on recent observations of the NSLP as published by AEMO and estimating the relationship between the NSLP load and the regional (South Australian) load using regression analysis.

[14] ACIL Tasman, *The fair and reasonable value of exported PV output: Describing the methodology developed by ACIL Tasman for estimating the fair and reasonable value of exported PV output in South Australia*, March 2013, (available on the Commission's website at http://www.escosa.sa.gov.au/library/130327-FairAndReasonableValueOfExportedPVOutput-ACILTasman.pdf).

- Projecting the total installed capacity and effective generation of PV systems in South Australia.
- Combining the wholesale spot price forecasts with the projected NSLP to determine an NSLP-weighted spot price forecast.
- Adding the value of avoided network losses, obtained by analysing historic distribution loss factors for South Australia as published by AEMO.
- Adding the cost of NEM market and ancillary service fees, based on the most recent actual fees published in AEMO's annual budget.

3.3.1 Issues raised in submissions and the Commission's consideration

Three retailers, AGL, Origin Energy and EnergyAustralia, provided a number of comments on various methodological issues.

3.3.1.1 The FiT methodology and energy purchase costs

Submission

AGL acknowledged the common practice of estimating the value of the FiT premium from wholesale energy prices, adjusted for distribution losses and avoided market and ancillary service fees across jurisdictions. However, AGL claimed that there is an inherent difficulty in estimating the value of energy to all retailers due to varying cost structures across retailers.

On another related matter, AGL argued that the forecast change in spot prices does not necessarily mean that all retailers will experience the same change in energy purchase costs. AGL noted that solar PV uptake tends to reduce average demand for electricity without equally reducing the peak demand and as load profiles become peakier it tends to increase retailers' hedging costs.

Commission's consideration

The Commission considered the issues raised by AGL in its 2012 review of the FiT Premium.[15] While the Commission recognised that retailers are likely to have hedging instruments in place, which will lead to different wholesale cost structures across retailers, it concluded that the value of energy produced by PV generators does not impact on a retailer's optimal hedging position and a fixed contracting position will deliver costs or benefits to a retailer equal to the spot price. The Commission's approach of valuing the energy from PV generators at the NSLP-weighted spot price was therefore considered appropriate. The Commission continues to support that approach.

[15] ESCOSA, *2012 Determination of Solar Feed-in Tariff Premium, Final Price Determination*, January 2012, pp.37-40.

The Commission also notes that, to the extent that PV generation reduces average demand by more than peak demand (worsening the load profile), that change will be reflected in the projected NSLP, which will translate into a higher forecast NSLP-weighted spot price.

A detailed explanation of the impact of PV exports on hedging is included in Section A.2.5 of Annexure A.

3.3.1.2 The projection of the uptake of solar PV installations

Submission

EnergyAustralia commented on the methodology used by ACIL Allen for projecting solar uptake. It considered that the methodology may not be appropriate in the long-term since the rate of solar PV uptake may reduce once the distributor-paid feed-in tariff credit is phased out.

Commission's consideration

As at 31 May 2013, there were approximately 19,000 PV system approvals pending. Coupled with the anticipated termination of the distributor FiT of 16c/kWh in September 2013, it can be assumed that there will continue to be a substantial increase in numbers in the short term as people move to take advantage of the program before it is phased out.

The Commission notes EnergyAustralia's concern and will reconsider the methodology for the projection of the solar PV installation uptake for future periods. However, the Commission considers that the current projection of the uptake of solar PV installations for the next six months is considered reasonable.

Furthermore, it should be noted that the Commission has published an Issues Paper that deals with the future regulatory treatment of the FiT premium.

3.3.1.3 The value of energy

Submission

EnergyAustralia sought clarification regarding the manner in which the NSLP is adjusted to account for solar generation:

> *However, ACIL Tasman also suggest that an adjustment for solar generation is required to historical NSLP and system demand data published by AEMO as "neither accounts for electricity generated by PV systems".*[16]

[16] EnergyAustralia, *Response to 2013 Determination of Solar Feed-in Tariff Premium – Draft Price Determination*, 22 April 2013, p2, (available on the Commission's website at:

Commission's consideration

ACIL Allen Consulting has provided the following response[17] in relation to this matter:

> *As Energy Australia notes, the actual NSLP is net of the impact of solar PV systems. This means that, at any given time, the NSLP understates latent demand for electricity of customers on the NSLP by the amount of solar PV output. The difference between latent demand and metered demand is the total output of solar PV systems (in aggregate, this is not true for individual customers).*
>
> *To estimate the value of exported PV output we need an estimate of what the NSLP will look like in the forecast period. The objective is to project the NSLP as it will be after accounting for growth in PV capacity. If we do not account for growth in PV capacity the shape of the projected NSLP would be different than the shape of the actual NSLP, which would have implications for the estimated value of PV output.*
>
> *To project the NSLP we first project aggregate total demand of customers on the NSLP and then subtract the output of PV systems given our projection of the total PV capacity in the forecast period.*
>
> *To do this we:*
>
> 1. *estimate the relationship between latent demand from NSLP customers and latent demand at the regional reference node (the estimated relationship itself is summarised in our earlier advice)*[18]
> 2. *project the latent NSLP forward into the forecast period*
> 3. *project PV capacity and, therefore, PV output into the forecast period*
> 4. *subtract the projected PV output from projected latent NSLP to produce an estimate of metered (i.e. actual) NSLP in the forecast period.*
>
> *This is done by estimating solar output for each half hour of the historic period using observed solar capacity levels and a*

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http://www.escosa.sa.gov.au/library/130424-SolarFeedinTariffDraftDeterminationSubmission-EnergyAustralia.pdf)

[17] ACIL Allen Consulting, email correspondence, 13 June 2013.

[18] ACIL Tasman, *The fair and reasonable value of exported PV output: Describing the methodology developed by ACIL Tasman for estimating the fair and reasonable value of exported PV output in South Australia*, March 2013, p23.

normalised solar insolation profile. The estimated solar output value is added to both metered NSLP demand and total regional NEM demand to create the two latent demand series on which the regressions are undertaken (step 1).

We then project that relationship forwards into the forecast period. That projection is computed using the regression equation and the sum of the simulated demands used in the PowerMark modelling and the output of projected solar capacity (and other data such as day of week etc). This provides a projection of latent NSLP (step 2).

The projection of PV capacity is done on a straight line basis as described in the report. PV output is estimated using the same solar insolation profile used in step 1 (step 3).

The (hourly) projection of PV output is subtracted from the (hourly) projection of latent NSLP to produce a projection of actual (metered) NSLP (step 4).

The Commission supports the manner in which ACIL Allen have accounted for the impact of PV generation on the NSLP.

3.3.1.4 The benefits from PV systems

The CEC raised several matters in relation to the benefits of PV systems and to whom these benefits should accrue.

Submission

The CEC argued that the term 'fair and reasonable' should be re-interpreted in the widest possible manner and, in particular, recommended that:

> *The term 'fair and reasonable' should be interpreted as a subsidy-free value that reflects the benefits of electricity generated from small-scale PV generators to electricity retailers* ***and to other parties****. It should not be the financial benefits that owners of solar PV systems provide to their electricity retailer alone.*[19]

CEC argued that the term 'fair and reasonable' should also reflect the benefits enjoyed by other parties as well, such as: distribution network service providers; other businesses and entities in the electricity supply value chain; and other customers.

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[19] Clean Energy Council, *2013 Determination of Solar Feed-in Tariff Premium-Draft Determination Paper Submission*, April 2013, p2, (available on the Commission's website at: http://www.escosa.sa.gov.au/library/130424-SolarFeedinTariffDraftDeterminationSubmission-CleanEnergyCouncil.pdf)

Commission's consideration

The Commission notes that the major source of benefit to all parties from PV generation is the reduction in purchases from the regional reference node[20] (RRN).

Reduced demand from the RRN, whether it results from increased PV generation or from a general reduction in energy usage, is likely to result in a reduction in the wholesale pool price of electricity to which all retailers are exposed.

This benefits retailers in terms of lower purchasing costs and if these cost savings are passed on, then all electricity consumers benefit.

Any reduction in peak demand as a result of PV generation may mean that distribution network service providers would need to incur lower levels of capital expenditure to meet regulated service standards. As a consequence, a reduction in (peak) demand not only benefits distribution network service providers but all electricity customers as these lower costs should eventually flow through in terms of lower network charges.

In both of the above cases, market and regulatory systems allow the benefits identified by the CEC to be passed on to consumers generally. It is not feasible to determine and allocate to PV customers those benefits that arise purely from PV generators.

The Commission notes that these matters were considered in the Commission's 2012 FiT Premium Determination and its March 2013 Draft Determination and, on the weight of the evidence before it, the Commission has determined that there is insufficient justification for it to change its current position.

3.3.1.5 Quantifying the size of the benefits of PV generation and a reduction in network factors

Submission

CEC recommended that the Commission should publish:

> *… an estimate of the approximate size of the financial benefits that South Australian owners of solar PV systems will provide to all South Australian electricity retailers and which will not be returned to solar generators if ESCoSA's feed-in tariff proposal is adopted.*[21]

The CEC also recommended that:

> *The financial benefits that accrue to all electricity retailers from solar PV generation should be returned to owners of solar PV systems. In situations where it is not possible to attribute benefits*

[20] The regional reference node is the theoretical, or notional, reference point in each region of the National Electricity Market where the wholesale pool price is set for the entire region.

[21] Clean Energy Council, *2013 Determination of Solar Feed-in Tariff Premium-Draft Determination Paper Submission*, April 2013, p3.

> *to individual electricity retailers the benefit should be calculated based on the total benefit to all electricity retailers, apportioned by market share.* [22]

The CEC considers that PV generators should be rewarded for delivering such benefits. It cited a study[23] published in 2013 by the Victorian Government which estimated that by enabling the avoidance or deferral of network investment, decentralised energy could save Victorian electricity consumers in the order of $437 million per annum by 2020.

In a similar manner, the CEC have argued that the benefits of reduced network loss factors should be passed onto the owners of PV systems. Furthermore, it reiterated that the Commission

> *… provide an order of magnitude estimate of the financial benefit arising from PV exports and subsequent changes in network loss factors.* [24]

Commission's consideration

As discussed in its 2012 FiT Premium Determination and its March 2013 Draft Determination, it is difficult to determine the indirect benefits that may be attributed to solar PV. Isolating the impacts of PV generation on wholesale spot prices, avoided risk management costs and reduced network loss factors from other drivers is not feasible. Retail market offers are likely reflect the impacts of all relevant drivers and the Commission does not have the regulatory powers to compel retailers to re-allocate any benefits (or costs) attributed to PV generation away from customers generally to PV customers.

With respect to the specific issue of network loss factors, as discussed in Annexure A.2.4.3, the Commission concluded that the reduction in loss factors would be difficult to assess and that the benefits would be passed back to all consumers over time. Finally, a reduction in losses is adjusted by AEMO when setting loss factors to be applied to wholesale purchases at the RRN.

Furthermore, the proposals for quantifying the total size of the benefits of PV generation is beyond the scope of this determination.

[22] Clean Energy Council, *2013 Determination of Solar Feed-in Tariff Premium-Draft Determination Paper Submission*, April 2013, p3.

[23] Langham, E., Dunstan, C., Cooper, C., Moore, D., Mohr, S. and Ison, N. 2011, *Decentralised Energy Costs and Opportunities for Victoria*, prepared by the Institute for Sustainable Futures, University of Technology Sydney for Sustainability Victoria, November 2011.

[24] Clean Energy Council, *2013 Determination of Solar Feed-in Tariff Premium-Draft Determination Paper Submission*, April 2013, p3.

3.3.1.6 The value of ancillary service fees

Submission

EnergyAustralia sought clarification as to why the total National Electricity Market (NEM) and Ancillary Service fees at the RRN sums to $0.92/MWh instead of $0.89/MWh.

Commission's consideration

The Commission notes that ACIL Allen's briefing note[25] states that the total NEM and Ancillary Service fees at the RRN is $0.89/MWh, not $0.92/MWh as previously stated. However, after reviewing this matter the Commission also notes that as a consequence of its relatively small magnitude and the effects of rounding to two decimal places in the final overall calculation, this adjustment will not impact the final outcome of the Commission's view of the fair and reasonable value.

3.3.1.7 Retail margin, headroom and retail operating costs

Submission

The CEC recommended that as retail margin and headroom costs are significant components of the overall electricity cost to customers then the value of these components should also be returned to owners of PV installations when retailers avoid costs. Specifically, the CEC stated:

> *Where PV energy exports enable retailers to avoid costs, the margin associated with them also forms part of the direct financial benefit to the retailer. Electricity retailers should not be able to retain the equivalent value of retail margin and head room on costs that they are able to avoid when PV energy is exported.*[26]

The CEC has arrived at this conclusion on the basis of its interpretation of the approach adopted by the QCA in its recent FiT determination.[27]

On a slightly different note, EnergyAustralia's submission noted that there were "not many" retailers offering voluntary FiT premiums in the past and that none were offering more than the minimum FiT premium now and suggested that retail operating costs were significant enough to prevent competition for solar customers.

> *If retailers consider that they are paying a fair value for the feed-in tariff and if operating costs are negligible for retailers, then there would be an incentive for retailers to offer FiT payments*

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[25] ACIL Tasman, *Briefing Note: The value of exported solar PV output*, 27 March 2013, Table 4, p7.

[26] Clean Energy Council, *2013 Determination of Solar Feed-in Tariff Premium-Draft Determination Paper Submission*, April 2013, p4.

[27] Queensland Competition Authority, *Estimating a Fair and Reasonable Solar Feed-in Tariff for Queensland*, March 2013, Table 2.2, p7, available at: http://www.qca.org.au/files/ER-QCA-FinalReport-ReviewofSolarFeedinTariffQLD-0313.pdf

voluntarily and try to attract solar customers. That there were not many offering a voluntary FiT previously, and that none offer more than the minimum FiT now, suggests that the costs are significant enough to discourage retailers from actively competing for solar customers. We ask the Commission to ensure that the minimum FiT is not too high and doesn't hinder competition for solar customers. [28]

Commission's consideration

The CEC's recommendation that owners of PV systems should receive, as part of the FiT premium, the margin and headroom on the electricity costs that retailers avoid when PV energy is exported is not supported by the Commission. A review of the relevant QCA decision (upon which the CEC has relied upon in arriving at its position) may indicate that the CEC has misinterpreted the approach adopted by the QCA. In fact, the QCA uses a similar approach to that of the Commission and does not include the the retail margin and headroom in its determination of the FiT premium.

With respect to EnergyAustralia's suggestion that retail operating costs may be significant enough to discourage retailers from competing for solar customers, the Commission notes that its obligation is to estimate the FiT premium to ensure that it continues to reflect the fair and reasonable value to a retailer of electricity fed into the network. It is not the Commission's role to ascertain a retailer's specific costs involved in acquiring, servicing and retaining customers with or without solar PV installations. Annexure A.2.8 considers the matter of retail operating costs in greater detail and, to summarise, the Commission notes that it is not undertaking a cost recovery exercise for funds already spent. It would be expected that an increase in the retail operating costs (if any) due to PV customers, would have already been accounted for and recovered via the retail tariffs of all customers.

3.4 Other related issues

3.4.1 Issues relating to the consultation process

Submission

In its submission, EnergyAustralia was concerned at the prospect of no consultation in relation to the methodology during the period of the determination and noted that:

[28] EnergyAustralia, *Response to 2013 Determination of Solar Feed-in Tariff Premium – Draft Price Determination*, 22 April 2013, p3.

> *If a periodic review is not allowed for, then we suggest the Commission consider a review of the methodology that can be triggered by the Commission or another stakeholder group.*[29]

Conversely, AGL considered that the Commission's intention not to undertake further consultation on the methodology during the period of the determination as reasonable, given that:

> *… the Commission has also indicated that it is prepared to advise and consult should any revision to the methodology be required due to any circumstances.*[30]

Commission's consideration

The Commission reiterates its statement in its draft determination on the process for consultation should any unforeseen circumstance arise:

> *However, should the Commission determine that the methodology requires revision due to any circumstances during the forecast period it will separately advise and consult on the relevant matters – otherwise, no further consultation will be undertaken during the period of the determination.*[31]

3.4.2 Issues related to the timing of changes

***3.4.2.1** Submission*

Both EnergyAustralia and AGL commented on the timing of the changes recommended by the Commission.

EnergyAustralia indicated that the timeframe for updating its systems on 1 July for the upcoming six month period is inadequate if the value increases above 9.8c/kWh. Although it conceded that for future periods there appears to be sufficient time allowed for it to make the appropriate changes to its systems for 1 January.

AGL notes that shifting the start date from 1 July to 1 January would introduce some complexities. Its preference is to maintain the 1 July timing; otherwise it would require AGL to mail out a separate letter solely to notify customers of the change in the solar FiT premium.

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[29] EnergyAustralia, *Response to 2013 Determination of Solar Feed-in Tariff Premium – Draft Price Determination*, 22 April 2013, p2.

[30] AGL, *2013 Determination of Solar Feed-in Tariff Premium-Draft Determination Paper Submission*, April 2013, p2, (available on the Commission's website at http://www.escosa.sa.gov.au/library/130424-SolarFeedinTariffDraftDeterminationSubmission-AGL.pdf)

[31] ESCOSA, *2013 Determination of Solar Feed-in Tariff Premium (Draft Determination)*, March 2013, p2.

Commission's consideration

The Commission notes EnergyAustralia's concerns in relation to timing of changes and will endeavour to provide as much notice as possible.

With respect to AGL's concerns regarding the complexities arising from the shift to a 1 January start, the Commission notes that retailers may face a slight increase in cost. However, the Commission considers that the benefits of using the latest and most cost-reflective value for the FiT premium available would more than outweigh the incidental administrative costs.

In contrast, Origin Energy concurred with both the proposed quantum of the FiT premium and the timing of the implementation for future periods, in particular:

> *From an administrative perspective, Origin concurs with maintaining the 9.8 cent per kWh rate for the remainder of calendar 2013 and considers the mechanical approach to updating the FIT premium on a calendar year basis thereafter is appropriate and the most efficient approach to apply in the short to medium term.*[32]

The Commission also notes that no other stakeholder objected to moving to a 1 January start date.

3.4.1 Deregulation of the FiT premium

3.4.1.1 Issues raised in submission

AGL[33], Origin Energy[34] and EnergyAustralia[35] each queried the necessity of continuing to regulate the FiT premium, given that electricity and gas prices have already been deregulated by the State Government. Even though AGL supports the tariff changes proposed by the Commission, it argued that:

> *Given that standing contract prices are no longer regulated, the requirement for ESCOSA to set this value under the Electricity Act is an anomaly.*

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[32] Origin Energy, *2013 Determination of Solar Feed-in Tariff Premium-Draft Determination Paper Submission*, April 2013 (available on the Commission's website at http://www.escosa.sa.gov.au/library/130422-SolarFeedinTariffDraftDeterminationSubmission-Origin.pdf)

[33] AGL, *2013 Determination of Solar Feed-in Tariff Premium-Draft Determination Paper Submission*, April 2013.

[34] Origin Energy, *2013 Determination of Solar Feed-in Tariff Premium-Draft Determination Paper Submission*, April 2013.

[35] Energy Australia, *2013 Determination of Solar Feed-in Tariff Premium-Draft Determination Paper Submission*, April 2013.

In its submission, EnergyAustralia encouraged the South Australian Government to deregulate the solar FiT premium before the end of the current determination period.

Although, Origin Energy supported the Commission's proposal to maintain the value of the FiT premium at 9.8c/kWh until 31 December 2013, it argued that the case for continuing regulation of the FiT Premium has been weakened by the State Government's decision to deregulate retail electricity prices. It also added that:

> *Given this decision, we consider it timely to also review the need to and effectiveness of regulating the FIT premium. Given the number of customers with solar PV systems installed in South Australia and the Government's own assessment of competitiveness within the retail market, we do not consider ongoing regulation of the FIT premium necessary.*

In addition, Origin Energy noted the lack of uniformity of FiT premiums across the NEM and suggested that this provided additional support for the removal of regulation.

3.4.1.2 Commission's consideration

The Commission has carefully considered AGL, Origin Energy and EnergyAustralia's call for the deregulation of the FiT premium particularly since retail energy prices were deregulated in South Australia on 1 February 2013.[36]

The Commission addressed this matter in greater detail in Chapter 2 but to summarise, although the legislation provides the Commission with the discretion to set the FiT premium, the Commission will vary the existing determination such that it will expire on 31 December 2013. However, prior to the expiration of the current determination, the Commission will review the solar FiT market, the level of competition and the need for, and nature of, future regulation of the solar FiT premium.

Accordingly, rather than consider these matters here, the Commission will treat the ongoing regulation of the FiT as a separate matter and, to that end, the Commission has released an Issues Paper separate to this Variation Price Determination inviting comments from interested parties.

3.4.2 Relativity of FiT premiums across jurisdictions

3.4.2.1 Issues raised in submissions

In its submission, Origin Energy observed that FiT premiums across the NEM lack uniformity and went on to note that:

> *…it is clear that FiT premiums in South Australia are materially higher relative to other parts of the NEM.*[37]

[36] http://www.premier.sa.gov.au/images/news_releases/12_12Dec/energyprice.pdf

Origin Energy noted that the proposed amount (of 9.8c/kWh) for the FiT premium in South Australia was substantially higher than those ruling in Queensland, New South Wales and Victoria by 34%, 27%, and 22.5% respectively. Despite this, Origin Energy supported maintaining the 9.8c/kWh till 31 December 2013.

3.4.2.2 Commission's consideration

As part of its final report released in March 2013, the Queensland Competition Authority (QCA) reviewed the FiT premiums being paid by retailers across the various jurisdictions in Australia[38]. A summary of the retailer FiT payments in each jurisdiction (as reported by the QCA) is provided in Table 3.1 below.

Table:3.1 Current jurisdictional retailer FiT payments across Australia

STATE	RETAILER FIT PAYMENTS (C/KWH)
New South Wales	7.7c contribution to existing Solar Bonus scheme 7.7-12.3c* from July 2012 (voluntary)
Queensland	4-10c - voluntary market offers
Victoria	6-8c - voluntary market offers
Tasmania	1:1 at customer's consumption tariff (22.64c)
Australian Capital Territory (ACT)	1:1 at customer's consumption tariff (voluntary offer)
Northern Territory	nil
Western Australia	Various location-based tariffs Horizon Power - 10c - 50c Synergy - 8.4094c
South Australia	9.8c for 2012-13

Note: Information current as at 8 March 2013. The ACT scheme and the NSW scheme (which is now closed) are both "gross" metered schemes. All other schemes (including the NSW voluntary scheme) are "net" metered schemes.

** Recommended benchmark range –as reported by IPART[39].*

The Commission notes that the FiT premium in South Australia lies within the range of the highest and lowest values being paid in other jurisdictions across Australia in contrast to Origin Energy's claims.

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[37] Origin Energy, *2013 Determination of Solar Feed-in Tariff Premium-Draft Determination Paper Submission*, April 2013.

[38] Queensland Competition Authority, *Estimating a Fair and Reasonable Solar Feed-in Tariff for Queensland*, March 2013, Table 2.2, p7.

[39] Refer to IPART's Solar feed-in tariffs website at http://www.ipart.nsw.gov.au/Home/For_Consumers/Solar_energy/Solar_feed-in_tariffs

However, the Commission notes that the value of the FiT premium across jurisdictions cannot be directly compared as the determination of that value depends on a range of factors that are specific to the jurisdiction (or region) as outlined in ACIL Allen Consulting's methodology report.

3.4.3 Private Submissions

3.4.3.1 Issues raised in submissions

The Commission also received submissions from two private individuals.

Private Individual 1[40] acknowledged that the South Australian Government's (distributor) Feed-in Tariff scheme has been successful but also claimed that many took unfair advantage of the scheme by installing solar panels in excess of their requirements resulting in wasted funds. An alternative scheme was proposed by Private individual 1 where "electricity credits" would be introduced and they would be "time limited".

Private Individual 2[41] objected to the Commission's decision to change the Feed-in Tariff premium from 11.2c/kWh to 9.8c/kWh on the basis that:

> *'The Commission should maintain my rate at 11.2c/kWh for the agreed period as with any "Normal" Business Agreement'.*

3.4.3.2 Commission's consideration

The Commission notes Private Individual 1's proposed alternative to the current Government scheme. However, the distributor FiT scheme as legislated does not fall within the Commission's powers and, as a consequence, it is beyond the scope of this determination.

In relation to Private Individual 2's objection to reducing the value of the FiT premium, the Commission reiterates that it is an objective of the legislation for it to have regard to the fair and reasonable value to a retailer of electricity fed into the network.

The advice the Commission has received from ACIL Allen confirms that the wholesale price of electricity has fallen[42] and that the updated value of the FiT premium is now much lower since the Commission's last determination in January 2012. Therefore, maintaining the FiT premium at the higher value in light of this knowledge would violate the Commission's legislated requirement. Accordingly, having discovered that there is

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[40] Private Individual 1, *2013 Determination of Solar Feed-in Tariff Premium-Draft Determination Paper Submission*, April 2013 (available on the Commission's website at http://www.escosa.sa.gov.au/library/130424-SolarFeedinTariffDraftDeterminationSubmission-PriviateIndividual1.pdf)

[41] Private Individual 2, *2013 Determination of Solar Feed-in Tariff Premium-Draft Determination Paper Submission*, April 2013 (available on the Commission's website at http://www.escosa.sa.gov.au/library/130424-SolarFeedinTariffDraftDeterminationSubmission-PriviateIndividual2_1.pdf)

[42] ACIL Tasman, *Briefing Note: The value of exported solar PV output*, 27 March 2013, p1, Table 1.

now a substantial difference between the “fair and reasonable value” and the value that would apply if the Commission did not change its determination compels the Commission to take action.

4. CONCLUSION

4.1 Commission's recent forecasts

The Commission engaged ACIL Allen Consulting (ACIL Allen) to advise it on the fair and reasonable value to a retailer of electricity fed into the network by solar PV installations. As part of that advice, ACIL Allen also updated its forecast of the SA NEM region time-weighted electricity spot prices that underpinned its advice on the FIT premium.

The following table shows the differences between the Commission's latest forecasts of the SA NEM region time-weighted electricity spot prices and those established under the 2012 FiT premium Determination. Both forecasts are based on expert advice received by the Commission from ACIL Allen.

ACIL Allen employed a similar methodology to that adopted in January 2012, deriving an updated projection of the wholesale price of electricity taken from *PowerMark*, using the latest demand forecasts released by AEMO in June 2012[43] (subsequent to the Commission's original determination) and the subsequent announcements of the mothballing of specific generating plant across the NEM and other adjustments.

The latest forecasts of the wholesale price of electricity for 2013/14 are approximately 24% below the 2013/14 forecasts established under the 2012 FiT Premium Determination.

It is noted that the projected electricity price used in the January 2012 determination is based on demand forecasts that were published by AEMO in August 2011.

Table 3.1: Projected SA NEM region time-weighted prices 2012/13 and 2013/14, $ nominal per MWh at regional reference node

SCENARIO	2012/13	2013/14
2012 FiT Premium Determination	$77.44	$87.05
Current estimate	$60.96	$64.29

Given those lower estimates, the Commission engaged ACIL Allen to update its forecasts of the value of exported PV output. Table 3.2 below summarises the projected values of exported PV output based on the above spot price forecasts. The forecast values of PV output take into account the projected spot prices and also include the value of avoided network losses and reduced market and ancillary service fees. The forecasts also incorporate updated information regarding the capacity of PV solar systems installed in South Australia as at 31 January 2013.

[43] AEMO, 2012, *National Electricity Forecasting Report - Chapter 6, South Australia Forecasts*, 29 June 2012, p. 6-1.

Table 3.2: Feed-in Tariff Premium
(nominal cents per kWh and GST exclusive)

	2013/14 (2012 DETERMINATION)	2013/14 (LATEST MODELLING)
Wholesale Electricity Cost	10.2	8.53
Avoided Losses	0.9	0.68
Market and Ancillary Service Fees	0.1	0.10
TOTAL	11.2	9.31

The modelling of the forecast value of PV output, which forms the minimum forecast FiT premium, was determined using a similar methodology to that used by the Commission in making its 2012 FiT Premium Determination. At the time, the Commission undertook an extensive public consultation process and considers that despite the adjustments to that methodology, there is no substantive reason to depart from the basis of that methodology under current circumstances.

4.2 Variation to the 2012 FiT premium determination

Under the 2012 FiT premium determination, the value of the FiT premium was set to increase to 11.2c/kWh on 1 July 2013. Based on the above modelling, that amount materially overstates the current value of energy produced by eligible PV generators. If the Commission did not vary or revoke the previous determination, electricity retailers would be required to pay a FiT premium that significantly exceeded the value of wholesale energy, and the resultant cost may lead to upward pressure on energy prices for all consumers. The Commission believes that such an outcome is not in the long-term interests of energy consumers.

In this Variation, the Commission will roll forward the current FiT premium amount of 9.8c/kWh to continue until 31 December 2013. The Commission's Variation is based on the following reasons:

- The existing FiT premium amount of 9.8c/kWh is broadly consistent with the Commission's latest forecast FiT premium amount of 9.3c/kWh, noting that the latter value is based on demand projections that are around twelve months old.
- Rolling forward of the existing FiT premium avoids another tariff change within the same financial year. This avoids any inconvenience to retailers and customers and seeks to minimise any administrative costs.

4.3 The FiT premium amount

Table 3.3 details the total mandated FiT payments to apply from 1 July 2013 compared to the 2012 determination.

Table 3.3: Feed-in Tariff Mandated Payments – Retailer FiT Premium plus Distributor FiT Payment (nominal cents per kWh and GST exclusive)

		2013/14 (2012 Determination)	2013 Applicable from 1 July 2013 to 31 December 2013 (Variation to the 2012 Determination)
Solar PV Cell Installation / Approval Date	Before 1 October 2011	11.2 + 44 = **55.2 c/kWh**	9.8 + 44 = **53.8 c/kWh**
	1 October 2011 to 30 September 2013	11.2 + 16 = **27.2 c/kWh**	9.8 + 16 = **25.8 c/kWh**
	From 1 October 2013	**11.2 c/kWh**	**9.8 c/kWh**

Note: The 44 cents per kWh payment is payable until 30 June 2028. The 16 cents per kWh payment is payable until 30 September 2016.

The Variation is based on AEMO's demand forecasts released in mid-2012 and also includes the impact of subsequent announcements to withdraw generating plant from the NEM by various generators as well as other matters.[44]

4.3.1 When the FiT determination takes effect

Pursuant to section 26(8) of the ESC Act, a price determination made by the Commission under section 35A of the Electricity Act takes effect on the date on which the notice of its making is published in the South Australian Gazette, or on a later date specified in the determination by the Commission. The Commission intends to issue a notice in June 2013, specifying that the Variation will take effect from 1 July 2013.

4.3.2 Variation to the term of the FiT premium determination

The Commission has varied the term of the 2012 Determination so that it will expire on 31 December 2013.

[44] Further details may be found in ACIL Tasman's *Briefing Note: The value of exported solar PV output*, 27 March 2013, available on the Commission's website at http://www.escosa.sa.gov.au/library/130327-ValueOfExportedSolarPVOutputBriefingNote-ACILTasman.pdf).

ANNEXURE A - THE VALUE OF FED-IN ELECTRICITY

A.1 Cost Components of Price

The electricity retail tariff is made up of four components:

- Transmission charges (paid to ElectraNet);
- Distribution charges (paid to SA Power Networks);
- Wholesale electricity costs; and
- Retailer costs.

Distribution and transmission charges comprise the costs associated with transporting electricity from generators to customers through the network. This includes the purchase and maintenance of network assets and ensuring the safety and reliability of the system. Generally, distribution and transmission charges make up around 40-45% of the retail electricity tariff paid by small electricity customers. These transport charges are set by ElectraNet and SA Power Networks and are regulated by the Australian Energy Regulator (AER)[45]. Retailers include these costs in their retail charges as a way to collect the amounts due to ElectraNet and SA Power Networks. Retailers have no ability to amend the amount that is charged.

Wholesale electricity costs and other retailer costs are the charges payable by a retailer as a result of supplying electricity to its customers. A retailer must pay for the amount of electricity consumed by its customers. In addition, other costs incurred by a retailer include: customer service; sales and marketing; revenue collection; management and support (including corporate functions); and performance of obligations under green schemes. Wholesale electricity costs and other retailer costs make up around 55-60% of the retail electricity tariff.

The Commission's task is to make a determination in relation to the credits payable by a retailer for the feeding in of electricity into a distribution network.[46] Given that retailers are unable to influence the amounts payable in terms of distribution or transmission charges, it is prudent for the Commission to assess whether solar PV generation provides a benefit in terms of a retailer's controllable costs only.

Retailer controllable costs are:

- the price that the retailer pays for wholesale electricity; and

[45] The manner in which these charges are determined may be found on the AER's web-site at www.aer.gov.au

[46] Refer section 4(1) of the transitional provisions of the *Electricity (Miscellaneous) Amendment Act 2011*.

- the costs a retailer incurs in running its retail business.

Therefore, the Commission has determined the value of solar PV exports in relation to those controllable costs only. Accordingly, any impacts on transmission charges and distribution charges have been excluded.

In respect of the network, the Commission notes that solar PV cells may provide some benefits. However, there is also some evidence to suggest that PV systems actually increase network costs[47]. Theoretically, the introduction of solar PV could cause either an increase or decrease in network costs. The Commission notes that any network costs or benefits (distribution or transmission), will be assessed as part of the AER's price regulation function of those businesses and passed through to customers through amended distribution charges.

When considering the value to a retailer, the Commission has focused on avoided direct costs. Sources of value to a retailer should be measureable and ascribed to solar PV generation. The penetration of solar PV cells in South Australia may also provide indirect benefits to the market overall, but these indirect benefits cannot be easily or reliably attributed to solar PV.

A.2 Value of Fed-In Electricity

When PV customers generate electricity that is fed back into the network it means electricity retailers need to buy less electricity from other generation sources. A key component of the Commission's methodology in determining the FiT premium is the fair and reasonable value to retailers of each kWh generated by solar PV cells and fed back into the distribution network. The following section details the Commission's methodology in calculating this value.

A.2.1 Wholesale Electricity Cost

To supply electricity to homes and businesses retailers must purchase electricity from generators via the National Electricity Market (NEM). In a physical sense electricity is produced by a generator, transported via a transmission line, fed into a distribution network and is then used by electricity customers. Electricity retailers act as financial intermediaries between customers and generators and are not physically responsible for conveying electricity. Retailers purchase wholesale electricity from the NEM and generators who feed it into the NEM. At the same time retailers' bill customers for electricity consumed at each customer's premises.

[47] ACIL Tasman, *The fair and reasonable value of exported PV output: Describing the methodology developed by ACIL Tasman for estimating the fair and reasonable value of exported PV output in South Australia*, March 2013, Appendix A, p5-6.

The Australian Energy Market Operator (AEMO) facilitates the financial side of the wholesale electricity market. AEMO is responsible for calculating the wholesale electricity price in the NEM and also determines a retailer's liability based on customer consumption. A daily settlement process is run by AEMO to enable the transfer of funds from retailers to generators.

There are five different regions in the NEM and each has a different wholesale spot price calculated at the "regional reference node" (RRN). The RRN is a designated spot in a region where the wholesale electricity price is set (in South Australia this is at Torrens Island Power Station). A RRN allows for the variation in demand and supply to be reflected in the wholesale price for each region. A retailer's liability for wholesale electricity (including losses) is calculated at the RRN rather than at the customer's meter box. This means that a retailer buys a quantity of electricity at the RRN which then flows through to customers. This quantity is equal to the amount of electricity its customers need plus an amount that allows for losses in the distribution system.

The spot price of wholesale electricity is calculated on a half hourly basis by AEMO and is based on an auction process that determines the value of electricity. This half hourly interval is known as a trading interval. To ensure a retailer pays for the electricity that is used by its customers, the customer's demand for electricity needs to be matched to the spot price during each trading interval. A total wholesale electricity price can then be produced which will be paid for by the retailer. According to AEMO:

> *…the settlement price for both generators and market customers [retailers] is equal to the amount of energy produced or consumed multiplied by both the spot price that applies in the region of their operation and any loss factors that apply.*[48]

If customers have interval meters, it is possible to calculate the exact amount of electricity used during each trading interval. AEMO is able to calculate the actual wholesale electricity cost for that customer and bill the customer's retailer for that electricity.

Customers with basic meters do not have interval data so it is not possible to match actual consumption to trading intervals because this consumption information is not available. To ensure that each retailer pays for the right proportion of electricity used by its customers, AEMO must take the accumulated data and apportion the consumption into half hourly blocks so that the wholesale electricity cost can be calculated.

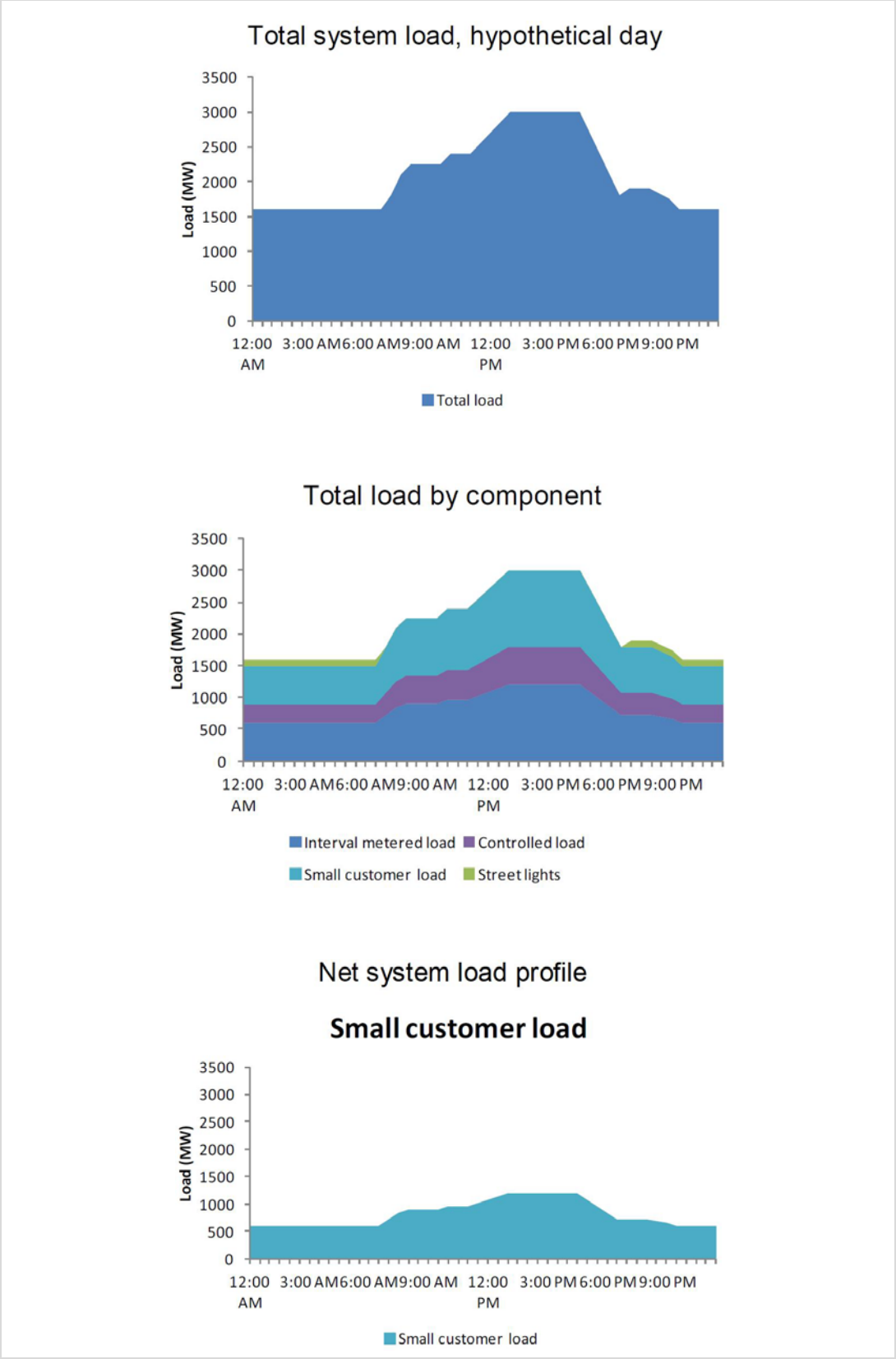
[48] ACIL Tasman, *The fair and reasonable value of exported PV output: Describing the methodology developed by ACIL Tasman for estimating the fair and reasonable value of exported PV output in South Australia*, March 2013, p5.

The total amount of electricity consumed in a trading interval less all known interval data is the consumption attributed to customers with accumulation meters. When this calculation is performed for each trading interval during the day it is possible to build up a half hourly profile which represents the electricity consumption of all customers with accumulation meters. This profile is called the Net System Load Profile (NSLP). The formula for calculating the NSLP is broadly:

Total Electricity – Loss Factors – Interval data – Controlled Load (Hot Water)
= **Net System Load Profile (NSLP)**

In its report to the Commission, ACIL Allen presented a diagram of the NSLP for a hypothetical day. Figure A.1 below shows each layer of total system load and illustrates how the NSLP is derived by stripping out known consumption loads.

Figure A.1: Derivation of the Net System Load Profile



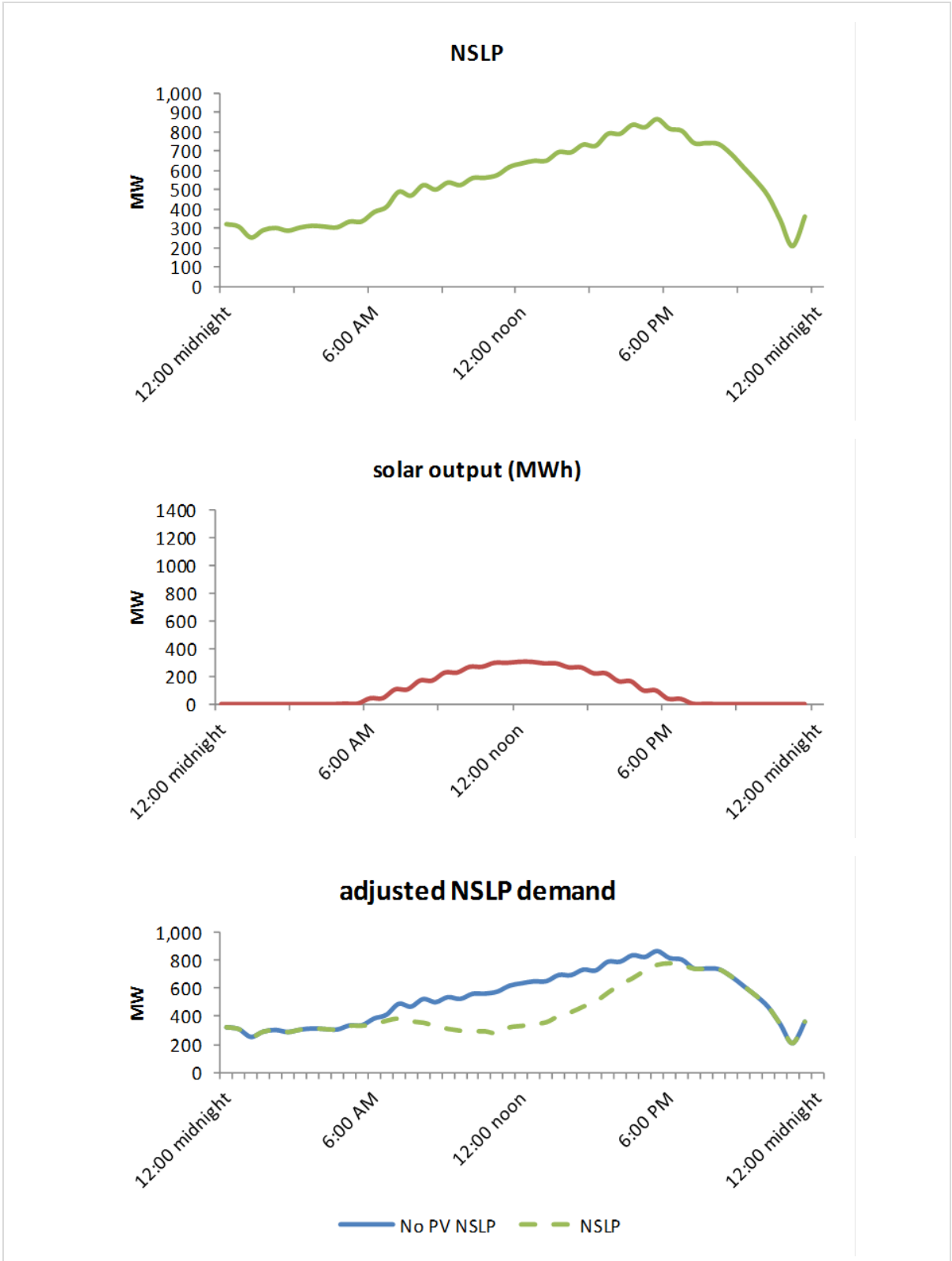
Once the NSLP has been derived, it is possible to calculate the wholesale electricity price payable by a retailer for its customers. All retailers in an area are subject to the same NSLP. The result is that retailers effectively pay an average wholesale electricity spot price for their customers with accumulated metering data. Benefits and costs associated with variation in an individual retailer's consumption are spread across all retailers.

The introduction of solar PV generation changes the dynamics of the electricity market. When solar PV systems produce electricity, customers either draw no electricity from the network (when they export), or draw a reduced amount from the network because the customer first uses the electricity they generate themselves. What this equates to is an overall reduction in demand from the network which means less electricity is required from other generators (e.g. coal, gas).

Of course solar PV cells only generate power during daylight hours which means the reduction in demand is confined to this time. Due to the way the NSLP is calculated, on a half-hourly basis, the reduction in demand flattens the shape of the NSLP.

Figure A.2 illustrates the effect that solar PV generation has on the NSLP.

Figure A.2: Deriving the Adjusted NSLP Demand



The reduction in the NSLP has two effects on the settlement of the wholesale electricity market. Firstly, the resulting NSLP-weighted price will be lower than it would be if PV systems were not in place (the price effect). Secondly, the total amount of electricity sold is reduced (the volume effect).

A.2.2 Reduction in NSLP Weighted Electricity Price

As a general rule, a high demand for electricity is likely to result in a high electricity spot price. Conversely when the demand for electricity is low, wholesale spot prices are likely to be low. Electricity demand is typically higher during the day, peaking during the late afternoon before flattening off overnight. This means that on a normal day, wholesale electricity is more likely to be expensive during the day than at night.

The reduction of the NSLP effectively reduces a retailer's liability for expensive daytime power because this is the time that solar PV systems generate the most electricity. The lower daytime demand results in reduced costs for all retailers in the market due to the mechanics of the settlement process. All retailers, even those without PV customers, benefit from the reduction in demand for wholesale electricity during times when the spot price is high because the same NSLP is applied to all retailers.

It should be noted that this effect is already factored in the operation of the NEM. SA Power Networks advised that, as at 31 January 2013, approximately 131,307 solar PV generating units (representing between 300MW to 400MW in additional generating capacity) have been installed in South Australia. This PV generating capacity would have already had an effect in changing the weighting of the wholesale spot price. The lower price is already applied to all retailers and in a competitive environment these savings will be passed on to all electricity consumers through lower tariffs.

In considering the value to a retailer of PV exports, the Commission's over-riding objective is the protection of the long term interests of South Australian consumers. In theory, the reduction in price could be returned to PV customers only but this would involve the employment of complex forecasting techniques and would be difficult (and, likely, costly) to administer. Furthermore, the Electricity Act requires that the Commission make an assessment of the value of electricity fed-into the network. Around two thirds of the electricity causing this reduction in demand (and, therefore, a retailer's cost) is due to in-home use and, as such, is excluded from this assessment[49].

The link between electricity fed into the network and a reduction in retailers' costs, therefore, is diluted such that it would be difficult to allocate a value to PV customers with any certainty. This is especially the case in South Australia since interval data showing in-home use compared to exports is largely unavailable. As a consequence, the Commission has decided to exclude this effect from its assessment of the value of PV exports noting that any savings resulting from PV exports will be passed on to all consumers through the normal operation of the market.

[49] ACIL Tasman, *The fair and reasonable value of exported PV output*, March 2013, p.15.

A.2.3 Reduction in Overall Wholesale Electricity Price

The section above discussed the effect that solar PV generation has on the NSLP-weighted wholesale spot price. Similarly, it is necessary to consider whether increased solar PV generation has influenced the spot price of wholesale electricity such that it would provide value to retailers whose solar PV customers feed back into the network.

It is likely that the reduction in demand, as a result of solar PV generation, will have influenced a reduction in the wholesale electricity spot price. ACIL Allen's report notes that *"this is reflected in recent prices and therefore in projection based on demand growth from present levels."*[50]

The reduction in wholesale electricity price is a shared benefit that affects all retailers. It would be extremely difficult to simulate the change in the spot price as a result of each kWh of solar PV generation. Attempting to return gains to PV customers would again be challenging, and likely costly, to administer. Consequently, the costs are likely to exceed the amount of any benefit.

Once again, in considering the value to a retailer the Commission has also considered the long term interests of South Australian consumers. The operation of the market means that reductions in the wholesale spot price will pass through to all retailers equally. Savings can then be passed on by retailers to their customers through the competitive market. Accordingly, the Commission has decided to exclude this effect from its assessment of the fair and reasonable value of PV exports.

A.2.4 Reduction in Volume

AEMO's settlement system identifies the retailer responsible for every electricity meter, including financial responsibility for paying the wholesale electricity cost for any electricity that is drawn from the network through each meter. Likewise, when a customer has solar PV cells, any electricity that is fed-back into the network accrues as an "electricity credit" to that retailer. The nature of the metering arrangements means that the quantity of solar PV electricity generated by a retailer's own customers is captured by that retailer.

The "electricity credit" reduces the amount of electricity that the retailer needs to purchase at the RRN because it is available within the network to be used by another customer. In this simplified example, which excludes losses, if a retailer needs to supply 100kWh into the network and receives 10kWh of solar PV generation then it will only need to purchase 90kWh at the RRN. The 10kWh reduction in liability at the RRN translates to a reduction in direct costs.

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[50] ACIL Tasman, *The fair and reasonable value of exported PV output: Describing the methodology developed by ACIL Tasman for estimating the fair and reasonable value of exported PV output in South Australia*, March 2013, Appendix A, p7.

To determine a value for the electricity fed-back into the network in future years, it is necessary to project:

- the NSLP; and
- the wholesale spot price in the SA NEM region.

The Commission engaged ACIL Allen to prepare these projections. The NSLP was derived by ACIL Allen:

> *"… by estimating the relationship between the NSLP load and the regional (South Australian) load over the calendar years 2008 to 2010. That relationship was estimated using the multiple linear regression technique of ordinary least squares. A number of specifications were considered in the process. The specification that provided the best fit and most reasonable results was:*

$$N_t = 863.42 - 428.8 * peak_t + (0.740 * peak_t - 0.938) * load_t + (0.000485 - 0.000257 * peak_t) * {load_t}^2 - 12.5 * Q2 + 44.5 * Q3 - 10.9 * Q4$$

Where:

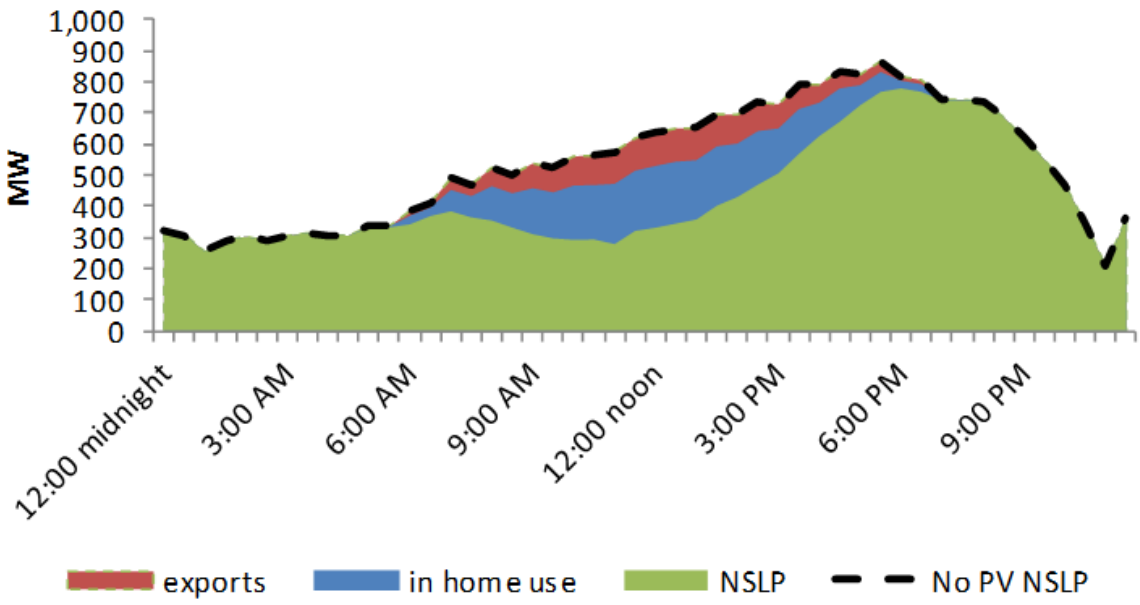
N	*is the sum of South Australian NSLP load and estimated (gross) PV output*
Peak	*is 1 from 7:00am until 11:00pm weekdays (excluding public holidays in all NEM states) and 0 otherwise*
Load	*is the sum of South Australian regional reference load and estimated (gross) PV output*
Q2	*is 1 during the second quarter of the calendar year, that is, April, May and June and 0 otherwise*
Q3	*is 1 during the third quarter of the calendar year, July August and September and 0 otherwise*
Q4	*is 1 during the fourth quarter of the calendar year, October, November and December and 0 otherwise*
t	*is a half hourly time index"*[51]

In addition, ACIL Allen's analysis incorporates estimates for growth in the number of solar PV systems and also the output from solar PV systems in South Australia over the period to 2013/14.

[51] ACIL Tasman, *The fair and reasonable value of exported PV output: Describing the methodology developed by ACIL Tasman for estimating the fair and reasonable value of exported PV output in South Australia*, March 2013, p21.

The derivation of a NSLP for 2013/14 combined with an estimate of solar PV output means that it is possible to calculate the change in shape to the NSLP as a result of solar PV exports, refer Figure A.3.

Figure A.3: Illustrative example of the NSLP adjusted by PV output showing in-home use and exports



A detailed explanation of this methodology can be found in ACIL Allen's Report[52].

To calculate the value to a retailer of this electricity, it is necessary to forecast the wholesale electricity spot price for 2013/14. ACIL Allen prepared a projection of the wholesale spot price of electricity in South Australia using *PowerMark,* its model of the NEM. Key inputs into the projection include:

- NEM regional peak demand and electricity;
- Environmental policy settings;
- Generator characteristics including capacity, thermal efficiency and marginal costs;
- Interconnector settings; and
- New entrant technology costs and availability.

As explained previously, the introduction of solar PV alters the shape of the NSLP. Applying the change in load shape to the forecast wholesale electricity spot price allows

[52] ACIL Tasman, *The fair and reasonable value of exported PV output: Describing the methodology developed by ACIL Tasman for estimating the fair and reasonable value of exported PV output in South Australia*, March 2013.

for the calculation of the value to a retailer for reduced wholesale electricity cost. These wholesale electricity spot prices represent the rate payable for solar PV generation only.

A.2.4.1 Losses

The Commission has considered the issue of whether the FiT premium should incorporate the benefits of any avoided loss factors. In analysing the effect that solar PV has on losses, the Commission has differentiated between the concepts of avoided losses and reduction in loss factors. The following sections discuss the effect that solar PV has in this regard.

A.2.4.2 Avoided Losses

Solar PV exports reduce the amount of electricity that a retailer has to buy at the RRN on a one for one basis. As noted previously, when a customer feeds electricity back into the network the customer's retailer receives an "electricity credit" that is attributed to that retailer. This reduces the amount of electricity that the retailer needs to purchase at the RRN because extra electricity is available within the network to be used by another customer. The simplified example given, which excludes losses, shows that if a retailer needs to supply 100kWh into the network and receives 10kWh of solar PV generation, then it will only need to purchase 90kWh from the RRN. The 10kWh reduction in liability at the RRN translates to a reduction of direct costs.

This analysis does not take into account the reduction in losses as a result of solar PV generation being used by customers in close proximity, thus avoiding distribution losses associated with purchasing electricity at the RRN. As noted by ACIL Allen in its 2012 report to the Commission:

> *"If wholesale electricity incurs losses that are ten percentage points higher in reaching the point of consumption than exported PV output, 90 kWh of exported PV output would displace 100 kWh of wholesale electricity purchases."*[53]

This benefit to retailers is simple to demonstrate and is a result of the procedures used to settle the NEM.

In the NEM, all retailers buy electricity at the RRN and supply it to their customers. The NEM rules require that the retailer purchases an additional amount of electricity to account for losses that will occur while the electricity moves through the distribution network. The same rate of losses is applied to all wholesale electricity purchases by retailers regardless of their customer's proximity to the RRN. AEMO publishes the loss factor that will apply to all retailers on an annual basis. The Commission's consultant, ACIL Allen, analysed historical transmission and distribution loss factors set for the SA region of the NEM published by AEMO and found the overall loss factor to be around 8%.[54]

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[53] ACIL Tasman, *The fair and reasonable value of exported PV output: Describing the methodology developed by ACIL Tasman for estimating the fair and reasonable value of exported PV output in South Australia*, March 2013, p16.

[54] ACIL Tasman, *The fair and reasonable value of exported PV output*, March 2013, p.25.

The following example considers a retailer's liability when supplying two customers, one with solar PV cells and one without. Both customers require 100kWh of electricity over the period. For the purposes of this calculation a loss factor of 8% is assumed.

Customer 1 does not have solar PV cells. The customer's retailer would need to purchase 100kWh wholesale electricity from the RRN. When purchasing at the RRN an additional 8% is added to account for losses, so the retailer would be billed for 108kWh electricity (an extra 8kWh).

Customer 2 has solar PV cells and during the period supplies 10kWh to the network. The customer's retailer received the 10kWh as an "electricity credit" and, therefore, is only required to purchase 90kWh wholesale electricity from the RRN. As with Customer 1 an additional 8% is added to the purchase from the RRN so that the retailer must purchase 97.2kWh wholesale electricity (an extra 7.2kWh).

Both retailers bill their customer for the 100kWh consumed but for Customer 2 because 10kWh is received from solar PV generation the retailer avoids paying losses on the full 100kWh and only pays losses associated with 90kWh. This means in supplying electricity to Customer 2 the retailer avoids 0.8kWh of losses for which it would have to pay if it was supplying Customer 1. This comparison is shown in Table A.2 below.

Table A.2: Avoided Losses as a result of solar PV exports

	Customer 1 No PV Cells	**Customer 2 With PV Cells**
Customer Consumption	100 kWh	100 kWh
PV Exports	-	10 kWh
Retailer to Purchase from RRN	100 kWh	100 kWh – 10 kWh =90 kWh
Additional for Losses (8%)	100 kWh + 8% = 8 kWh	90 kWh + 8% = 7.2 kWh
Avoided Losses	8 kWh – 7.2 kWh = **0.8 kWh**	

Therefore, the total wholesale electricity cost value to the retailer of exported PV output is the electricity that is fed back into the network plus the avoided losses. In this example the retailer avoids buying 10.8kWh of electricity on the wholesale market (10kWh solar PV export plus 8% loss factor). If the retailer did not have the benefit of 10kWh PV exports it would have been required to pay the NSLP weighted price for that electricity at the RRN, so the retailer avoids costs equal to 10.8 times the NSLP weighted price.

Since the same loss factor is applied to all wholesale electricity purchases it does not matter whether actual losses are higher or lower during the times that solar PV cells generate. The benefit to the retailer is based on the published loss factor that is applied in practice and as such this is the avoided direct cost.

It should be noted that the concept of avoided losses is separate from the notion that increased penetration of solar PV will influence a reduction of the loss factors experienced in the network. Loss factors are further discussed below.

In calculating the benefit to retailers of avoided losses the published loss factor of 8% has been used for 2013/14.

A.2.4.3 Reduction in Loss Factors

As a general proposition, a high penetration of solar PV cells would result in a reduction of losses in the network, as electricity is being consumed in close proximity to where it's generated. This is true for in-home use, where losses would be negligible. It also applies to exports that would be used in the local area thus displacing conventional generation that is produced remotely.

It is likely that the electricity market is already receiving a benefit from the reduction in loss factors due to solar PV generation. As more solar PV cells are installed it is to be expected that a greater reduction in losses will result. Submissions to the 2012 Determination stated that it would be difficult to assess a change in loss factors and that any benefits would be passed back to all electricity consumers over time.

A reduction in losses is automatically accounted for by AEMO when setting the loss factor that will be applied to wholesale electricity purchases at the RRN. The benefit of reduced loss factors from PV generation accrues to all retailers in the market and not just to those who receive solar PV generation from their customers.

Therefore, it is unnecessary to include an adjustment for a reduction in network loss factors because a reduction in loss factors does not provide a specific financial benefit to retailers with PV customers. A change in the loss factor would affect all retailers equally and would therefore affect the costs for all electricity consumers.

A.2.5 Hedging

The wholesale electricity spot price payable by retailers fluctuates during the day based on the supply and demand for electricity. In the NEM, a maximum wholesale spot price of $12,900[55] per MWh is set which is substantially higher than the average wholesale electricity price. Retailers limit their exposure to these high electricity prices by entering into financial arrangements commonly referred to as hedge contracts.

Hedge contracts essentially "insure" the retailer against paying high electricity prices. The Commission's consultant, ACIL Allen, in its earlier report of December 2011[56] describes the common arrangements preferred by electricity retailers in Australia.

> *The most common form of contracts used by electricity retailers are 'swaps' and 'caps' which are traded on a futures exchange operated by the Australian Securities Exchange (ASX), or private 'bilateral' equivalents of these contracts. Other, more exotic, contractual arrangements are entered into in the bilateral market.*
>
> *In simple terms, these contracts operate in the following manner:*
>
> - *swaps institute a series of payments between the seller and buyer of the contract to effectively fix the price of a certain volume of electricity, irrespective of spot price movements;*
> - *caps provide for payments from the seller of the contract to the buyer of the contract that effectively caps the price of electricity at a predetermined level, typically $300 per MWh, in exchange for an upfront 'premium' to enter into the contract.*

A detailed explanation of the financial flows under these "swap" and "cap" contracts can be found in Appendix A of ACIL Allen's December 2011 report.

When considering the value of solar PV generation to retailers, it is necessary to consider whether the reduction in demand provides a specific benefit to retailers in this context. Given that the vast majority of solar PV customers are settled against the NSLP, each retailer must therefore hedge against purchasing its share of the NSLP, rather than its customers' actual usage.

The same NSLP, and therefore the same weighted wholesale spot price, applies to all retailers in the market for customers with basic meters. This means that if 10 customers transfer from Retailer A to Retailer B, both retailers will still pay the same wholesale spot price per unit of electricity. The only difference to the retailers will be their share of the total cost which is based on the volume of electricity consumed by their customers.

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[55] This was the market cap price at the time of writing; however, it is indexed with inflation over time.

[56] The Report is available from http://www.escosa.sa.gov.au/projects/167/2012-determination-of-solar-feed-in-tariff-premium.aspx

A retailer's exposure to high prices will therefore increase in proportion to its share of the NSLP. Since hedging contracts generally work by limiting the amount paid per unit of electricity purchased from the NEM, the retailer's optimal contracting position will remain unchanged.

A retailer's optimal contracting position may be affected such that solar PV generation causes all retailers' exposure to the peak wholesale spot price to change through an overall lowering in the NEM spot price. Similar to the earlier discussion regarding wholesale spot prices, all retailers would be affected equally by this outcome.

Therefore, retailers with solar PV customers would not receive an individual benefit from avoided contracting and risk management costs. All retailers would benefit equally from any gains that are made and, in a competitive environment, these savings can be passed on to all customers by each retailer.

In its report, ACIL Allen Consulting reiterates how a fixed contracting position may deliver a cost or benefit to the retailer equal to the spot price:

> *A typical portfolio of contracts is designed to hedge against price risk. However, it would not limit retailers' exposure to volume risk. This means that, for a fixed contractual position, any variation in quantity of the electricity they purchase results in a cost (for an increase in consumption) or a saving (for a decrease in consumption) equal to the wholesale spot price. Where a retailer purchases less electricity from the wholesale market due to exported PV output it receives from its customers, it benefits by avoiding the wholesale spot price for each unit of reduced consumption.*
>
> *It follows from this analysis that the fair and reasonable value of exported PV output to a retailer from avoided NSLP purchases will equal the NSLP weighted spot price, irrespective of its contractual position.*[57]

Accordingly, the Commission has not included an additional amount, specific to hedging, when determining the value of PV exports.

A.2.6 Market and Ancillary Service Fees

To ensure the ongoing operation and reliability of the NEM, AEMO levies fees on market participants to cover its costs. Market fees cover AEMO's general operating costs. Ancillary service fees cover the costs associated with managing the power system safely, securely and reliably.

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[57] ACIL Tasman, *The fair and reasonable value of exported PV output: Describing the methodology developed by ACIL Tasman for estimating the fair and reasonable value of exported PV output in South Australia*, March 2013, Appendix A, p1.

Market fees are charged on a per MWh basis and each year AEMO publishes the fees that will apply for the forthcoming year. For 2012/13, market customers with a retail licence (retailers) must pay an additional $0.40 per MWh (approximately) to cover AEMO's operational costs.

Ancillary service fees are set on a cost-recovery basis. Market participants bid to provide ancillary services in the NEM and each week a new ancillary service cost is calculated. The fee is generally around $0.1 per MWh to $0.2 per MWh but has been known to spike at much higher levels. In the SA region of the NEM during week 17 of 2010, the fee was $35.79 and during week 41 of 2011 the fee was $17.66. To account for this variability when calculating the value to retailers, a three year average of ancillary service fees was calculated by ACIL Allen. The result is that retailers on average pay an additional $0.49 per MWh to fund ancillary services in the SA region of the NEM.

The market and ancillary services fees payable by retailers are calculated based on the amount of wholesale electricity purchased at the RRN. As discussed earlier, when a retailer receives PV exports from its customers the amount of wholesale electricity that it needs to purchase at the RRN 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. In addition, the retailer also has the benefit of avoided losses (see section A.2.4.2) so the retailer's market fees and ancillary service fees will also be reduced by this amount. Every kWh of solar PV generation received into the network therefore directly reduces the market and ancillary service fees payable by the customer's retailer. This effect has been included in determining the value of solar PV generation.

Over time the reduction in revenue received by AEMO (due to the effect of solar PV generation) will likely mean an increase in the unit price for fees payable by retailers. The same amount needs to be recovered over a smaller volume of electricity. This effect is due to the operation of the market and is also influenced by the prevalence of in-home use of PV generation (which is outside the Commission's terms of reference). The unit price payable by retailers that do not have solar PV customers would therefore be higher than it would otherwise have been if solar PV did not exist.

In theory, the increase in price could be attributed to PV customers only but would involve complex forecasting and would be difficult (and likely costly) to administer, potentially outweighing the benefits of the endeavour. It should be noted that retailers of solar PV customers would also be subject to the higher rates but calculated on a lower volume of electricity. The Commission has decided to exclude this effect from its assessment of the value of solar PV generation.

The benefit to retailers from solar PV generation, in regard to avoidance of fees, is based on the reduction in the amount of electricity purchased at the RRN (including losses) and does not include an adjustment for changes in the unit price of fees that may occur over time.

The benefit to retailers from solar PV exports in relation to market and ancillary fees is shown in Table A.3 below.

Table A.3: Value of Market and Ancillary Service Fees for 2013/14 (nominal, in dollars per MWh and cents per kWh)

	2013/14	
	$ PER MWH	CENTS PER KWH
MARKET FEES	$0.40	0.0
ANCILLARY SERVICE FEES	$0.49	0.1
TOTAL FEES AT RRN	$0.92	0.1
TOTAL FEES *(AFTER ADJUSTMENT FOR LOSSES)*	**$1.00**	**0.1**

The benefit to retailers from solar PV exports, in regard to market and ancillary service fees is approximately 0.1 c/kWh each year.

A.2.7 Green Scheme obligations

Both State and Commonwealth Governments have made public commitments to prepare Australia for a low carbon future through various programs and initiatives, including carbon pricing, clean energy research and development, and measures to help households, businesses and communities to transition.

At a State level, the schemes that apply in respect of South Australian electricity consumers are the Large-scale Renewable Energy Target (LRET), the Small-scale Renewable Energy Scheme (SRES) and the Residential Energy Efficiency Scheme (REES). ACIL Allen's description of these schemes (which can be found in its December 2011 report)[58] is restated below.

- The Large-scale Renewable Energy Target (LRET) is a Commonwealth Government scheme that requires electricity retailers to support the development of large-scale renewable energy sources by purchasing certificates created by the generators in proportion to their electricity acquisitions on behalf of consumers.
- The Small-scale Renewable Energy Scheme (SRES) is a Commonwealth Government scheme that requires electricity retailers to support the development of small-scale renewable energy sources such as PV and solar water heaters by purchasing certificates created by these sources in proportion to their electricity acquisitions on behalf of consumers.
- The Residential Energy Efficiency Scheme (REES) is a South Australian Government scheme that requires electricity retailers to support uptake of energy efficiency opportunities by households by purchasing certificates that represent pre-specified energy efficiency actions, in proportion to their electricity sales.

[58] The Report is available from http://www.escosa.sa.gov.au/projects/167/2012-determination-of-solar-feed-in-tariff-premium.aspx

Retailers are liable for the costs associated with the operation of these schemes and pay an amount based on the amount of electricity purchased or sold. If a retailer's customers consume a greater amount of electricity, then the retailer's contribution to the scheme increases (and vice versa).

The LRET and SRES schemes work on the principle of 'relevant acquisitions' of electricity. The Commission's understanding is that the *Renewable Energy (Electricity) Regulations 2001*[59] require retailers to pay fees associated with the electricity acquired on behalf of customers which includes both wholesale electricity and solar PV generation. On this basis, solar PV exports do not reduce a retailer's liability for LRET and SRES. For the purposes of this Determination, the Commission has not included a benefit to retailers for avoided green scheme costs as a result of solar PV generation.

The REES scheme operates slightly differently in that the retailer's liability is based on final sales. Despite this nuance the result is the same because the final amount of electricity sold to customers is the sum of the wholesale electricity bought and the solar PV exports acquired. Since the solar PV exports are essentially consumed at another customer's premises the retailer's liability for REES costs is the same as it would be if no solar PV existed.

The outcome is that the presence of solar PV exports does not change a retailer's liability for the applicable green schemes in South Australia. Therefore, in regard to green schemes, there is no benefit to retailers from solar PV output. Consequently, the Commission has excluded this item from its assessment of the value of solar PV exports to retailers.

A.2.8 Retail Operating Costs

Electricity retailers act as financial intermediaries between customers and generators and are not physically responsible for conveying electricity. Retailers purchase wholesale electricity from generators who feed it into the electricity network. At the same time retailers bill each customer for the electricity consumed at the customer's premises. The costs associated with performing these functions are known as retail operating costs. The Commission included the following items in its *2010 Electricity Standing Contract Price Path Determination* as contributing to a retailer's operating cost:

- Customer service;
- Sales and Marketing;
- Revenue collection;
- Management and support (including corporate functions); and
- Performance of obligations under the Residential Energy Efficiency Scheme (REES).

[59] http://www.comlaw.gov.au/Details/F2011C00810/Html/Text#_Toc305679053

In determining the FiT premium for solar PV exports, it is prudent for the Commission to consider whether the cost to serve a customer with a PV system is materially higher or lower than serving a customer who does not have a PV system. During the consultation process associated with the 2012 Determination, retailers submitted to the Commission that servicing solar PV customers was more costly than other customer groups. Retailers provided various reasons including: complexity with quoting and billing; ongoing meter data management requirements; and, increased customer service contact time compared to other customer groups. However, the Commission was not provided with any detailed data or evidence to support these positions.

Clearly, each customer group will have those customers who cost more than average to service and will have customers who cost less than average to service. Customers who have a greater awareness of electricity issues in general are likely to have a higher cost to serve regardless of whether they have solar PV cells or not. In any event, as the interface between customers and the electricity generation and supply industries, the key function of electricity retailers is customer service.

Finally, the Commission's task is to determine the FiT premium from the time a determination is made and is not undertaking a cost recovery exercise for funds already spent. It would be expected that an increase in the retail operating costs (if any) due to PV customers, would have already been accounted for and recovered via the retail tariffs of all customers.

Therefore the only assessment to be performed is that of any incremental cost that will apply from the date the determination is made. In its December 2011 report, ACIL Allen, noted:

> *… we have not attempted to estimate this incremental cost, our expectation is that it would be extremely small and within the reasonable error margin associated with the estimate of the energy value.*[60]

Given the above, the Commission has decided to exclude this from its assessment of the value of solar PV exports to retailers.

A.2.9 Sharing of Benefits

The Commission has previously noted that some of the benefit that accrues from the energy generated by solar PV systems may reduce a retailer's overall costs such that it becomes less costly for the retailer with solar PV customers to supply all of its customers, not just those customers with solar PV systems. Through its analysis, the Commission has identified benefits from solar PV generation that directly accrue to retailers (when

[60] ACIL Tasman, *The fair and reasonable value of exported PV output: Describing the methodology developed by ACIL Tasman for estimating the fair and reasonable value of exported PV output in South Australia*, December 2011, p27-28, available on the Commission's website at http://www.escosa.sa.gov.au/library/120103-SolarFeedinTariff-SupplementaryReport-ACILTasman.pdf.

customers feed electricity to the network), and benefits that are shared with all electricity consumers as a consequence of the operation of the NEM; as summarised below:

- Direct benefits to retailers from PV generation:
  - Reduced wholesale electricity cost;
  - Avoided losses; and
  - Avoided market and ancillary service fees.
- Benefits shared with all electricity consumers:
  - Reduced wholesale electricity cost due to flattening of the NSLP;
  - Reduced wholesale electricity price due to overall reduction in demand;
  - Avoided contracting and risk management costs; and
  - Reduced network loss factors.

PART B – PRESCRIBED AMOUNT – VARIATION TO DETERMINATION

5. AUTHORITY

5.1 This Electricity Feed-in Tariff Premium (Variation) Price Determination is made by the *Commission* pursuant to the powers of the *Commission* under section 26(8) of the *ESC Act* and Part 3 of the Electricity Act 1996.

6. COMMENCEMENT

6.1 This Electricity Feed-in Tariff Premium (Variation) Price Determination has effect on 1 July 2013 and will be taken to vary the Electricity Feed-in Tariff Premium Determination on and from that date.

7. TERM

7.1 This Determination takes effect on the 1 July 2013 and ceases to have effect on 31 December 2013.

8. DEFINITIONS AND INTERPRETATION

8.1 In this Electricity Feed-in Tariff Premium (Variation) Price Determination:

Commission means the Essential Services Commission established under the *ESC Act*;

Electricity Feed-in Tariff Premium Determination means the price determination made by the Commission under the ESC Act on the 27th of January 2012 for the purposes of fixing the minimum amount which an electricity retailer must credit in respect of electricity fed into the electricity distribution network by a qualifying customer (as defined under the Electricity Act) against the charges payable for the sale of electricity by that qualifying customer; and

ESC Act means the Essential Services Commission Act 2002.

9. VARIATIONS TO THE ELECTRICITY FEED-IN TARIFF PREMIUM DETERMINATION

9.1 The Electricity Feed-in Tariff Premium Determination is varied as follows:

9.1.1 Delete clause 1.3.1 and replace with new clause 1.3.1 below:1.3.1 This Determination takes effect on the commencement date and ceases to have effect on 31 December 2013.

9.1.2 Delete the table in the Schedule and replace with a new table below:

Prescribed Amount
*(nominal cents per kWh and GST exclusive)**

	APPLICABLE FROM 27 JANUARY 2012 TO 30 JUNE 2012	***APPLICABLE FROM 1 JULY 2012 TO 31 DECEMBER 2013***
PRESCRIBED AMOUNT	7.1	9.8

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