2012 DETERMINATION OF SOLAR FEED-IN TARIFF PREMIUM

FINAL PRICE DETERMINATION

January 2012

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TABLE OF CONTENTS

GLOSSARY OF TERMS

AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
COMMISSION	Essential Services Commission of South Australia
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
KWH	Kilowatt Hour
LRET	Large-scale Renewable Energy Target
MW	Megawatt
MWH	Megawatt Hour
NEM	National Electricity Market
NSLP	Net System Load Profile
PV	Photo-Voltaic
REES	Residential Energy Efficiency Scheme
RRN	Regional Reference Node
SRES	Small-scale Renewable Energy Scheme
RET	Renewable Energy Target

SUMMARY

This Final Price Determination presents the conclusions of the Commission's determination of the Solar Feed-in Tariff Premium. The requirement for the Commission to make a determination in respect of a feed-in tariff premium was triggered on 28 July 2011, when the Parliament of South Australia enacted legislation to change elements of the feed-in tariff scheme set out in Division 3AB of the Electricity Act 1996 (Electricity Act).[1]

The amended scheme also changed the feed-in tariff that ETSA Utilities is required to credit to customers who install eligible solar PV generators. This tariff (which was initially set at 44c per kWh) is being phased out for new customers over the next two years.

Notwithstanding the phase out, all small customers with eligible PV generators will be entitled to receive an amount (hereafter called the FiT premium), which is to be determined by the Essential Services Commission of South Australia (the Commission) and payable by electricity retailers. The amount determined by the Commission will reflect 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 will be required to credit the amount.

The FiT premium determination made by the Commission will apply from 27 January 2012, the date on which the determination will be published in the South Australian Gazette, until 30 June 2014. The Commission will consider the FiT premium to apply from 1 July 2014 as part of its determination of the regulated "standing contract" electricity price to apply from that date.

This report sets out the Commission's reasons for making the Final Price Determination.

A relevant factor to the Commission's determination process was the passing of the Australian Government's Clean Energy Bill 2011 through the Senate on 8 November 2011. A key element of the legislation is the introduction of a fixed carbon price of $23/t CO2-e, which will apply from 1 July 2012 to 30 June 2015. Thereafter, the carbon price will be determined through market forces. As the carbon price will increase the value of wholesale electricity, including the value of electricity exported from solar PV generators, the FiT premium determined by the Commission incorporates the impact of the carbon price from 1 July 2012.

Having considered submissions from interested parties and expert advice, the Commission has determined the FiT premium as follows.

[1] The new scheme was introduced via the Electricity (Miscellaneous) Amendment Act 2011, which came into force on 28 July 2011.

Table 1: 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 above amounts represent the minimum FiT premium that must be made available to PV customers. Electricity retailers may voluntarily pass on a higher amount. The amounts apply in addition to the 44c/kWh (pre October 2011) and 16c/kWh (post October 2011) amounts already established under the FiT scheme.

While this Final Price Determination is limited to the determination of the FiT premium itself, the Commission has made some general observations on the impact of the broader FiT scheme on the long-term interests of South Australian energy consumers, in section 3.2 of this report.

The current distributor funded FiT scheme provides generous subsidies to existing customers with solar PV, particularly those who are eligible for the 44c/kWh amount. While the Commission supports the decision to phase out the distributor funded scheme for new customers, it notes that the scheme may cost all South Australian energy customers around $90m per annum, which adds around $65 to the average annual household energy bill.

Under the amended legislation, those receiving 44c/kWh also get the FiT premium determined by the Commission, which results in a total FiT amount of 51.1c/kWh from 27 January 2012. This will increase to about 53c/kWh from 1 July 2012. The total FiT amount is over 7 times the current value of wholesale electricity produced by the systems, and over 4 times the value of electricity being generated by wind farms (approximately 11c/kWh)[2].

[2] The Commission has estimated the long-run marginal cost of wind generation to be around 11c/kWh, as part of its assessment of the costs of the expanded renewable energy target (refer http://www.escosa.sa.gov.au/library/100616-ERETPassThroughAGL-ReasonsForDecision.pdf)

PART A

- STATEMENT OF REASONS -

1 INTRODUCTION

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 transition.

At the Commonwealth level, these programs include: the Renewable Energy Target scheme, Australian Greenhouse Emissions Information System, Solar Cities, Carbon Farming Initiative, Low Carbon Communities and Solar Hot Water Rebate.[3] In addition, on 18 November 2011, the Australian Government's Clean Energy Act 2011 received Royal Assent. The Government has stated that the legislation:

> *"will put a price on carbon pollution, promote investment in renewable and clean energy technologies and support action to reduce carbon pollution."*[4]

From 1 July 2012 until 30 June 2015, a fixed carbon price of $23/t CO2-e will apply. Thereafter, a flexible carbon price will apply.

South Australian programs geared to reduce carbon pollution include the Residential Energy Efficiency Scheme (REES) and the South Australian solar PV generation plant feed-in scheme.[5] The solar feed-in scheme was introduced in 2008 via amendments to the *Electricity Act 1996* (SA) (Electricity Act). Under the scheme, households are credited for the electricity they feed into the distribution network from installed photo-voltaic (PV) generators. It aimed to fill the gap left by declining Commonwealth Government support for residential PV generation units and to allow the South Australian Government to pursue its objective of leadership in solar power.[6]

The scheme is a means of promoting de-centralised renewable energy generation by providing payments to customers for energy exported to the network by small-scale network-connected PV generation units. The scheme applies to "small" customers only (customers consuming less than 160MWh of electricity per annum). Similar schemes exist

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3 A more complete list of the Commonwealth Government's current programs is available on the Department of Climate Change and Energy Efficiency website at http://www.climatechange.gov.au/government/initiatives.aspx.

4 Refer http://www.cleanenergyfuture.gov.au/legislation-passes-house-of-representatives/

5 The South Australian Strategic Plan includes a target to achieve the Kyoto target by limiting the State's greenhouse gas emissions to 108% of 1990 levels during 2008-12, as a first step towards reducing emissions by 60% by 2050. On 7 December 2010, the South Australian Government released its Draft Climate Change Adaption Framework for consultation. A copy of the Draft Framework is available at http://www.climatechange.sa.gov.au/uploads/Adaptation/Draft%20CC%20Adaptation%20Framework.pdf. For details of the various South Australian Government programs and initiatives, refer http://www.climatechange.sa.gov.au/ and http://www.renewablessa.sa.gov.au/.

6 Government of South Australia, *South Australia's Feed-in Mechanism for Residential Small-Scale Solar Photovoltaic Installations*, Discussion Paper, February 2007, available http://www.climatechange.sa.gov.au/uploads/pdf/Feed-in_Discussion_Paper_submissions_closed.pdf

in other jurisdictions where the credit customers receive for exporting electricity into a distribution network ranges from 6 cents per kWh up to 60 cents per kWh.

Feed-in schemes can apply on either a "gross" basis, where payments are made for all energy produced by a PV generation unit, regardless of whether the energy is consumed in-house or is exported, or on a "net" basis, where payments are made only for energy exported to the network. Under a net feed-in tariff (FiT), energy produced by the PV generation unit that is consumed in-house displaces energy that would otherwise be drawn from the network, meaning that the customer avoids paying the retail price of electricity for those units produced and consumed. The South Australian FiT scheme operates on a net basis, and will continue until 30 June 2028.

On 28 July 2011, the Parliament of South Australia enacted further legislation to change elements of the FiT scheme set out in Division 3AB of the Electricity Act.[7]

The amended FiT scheme changes the feed-in tariff paid by the state's electricity distributor, ETSA Utilities, that can be earned by future customers that install eligible solar PV generators. The tariff (which was initially set at 44c per kWh) is being phased out for new customers over the next two years.

Notwithstanding the phase out, all customers with eligible PV generators will be entitled to receive an amount (hereafter called the FiT premium), which is to be determined by the Essential Services Commission of South Australia (the Commission). The amount determined by the Commission will reflect the fair and reasonable value to a retailer of electricity fed into the network and all retailers selling electricity to customers eligible to receive the FiT premium will be required to pay the amount.

The Commission performs its electricity price regulatory functions using powers conferred to it under the Electricity Act, which requires it to make price determinations under the *Essential Services Commission Act 2002* (ESC Act). In conjunction with the changes made to the Electricity Act regarding various aspects of the feed-in scheme outlined above, the Commission is required to make an initial determination in respect of the amount that small customers with eligible generators will be credited by retailers for the feeding-in of electricity into a distribution network.

This FiT premium price determination made by the Commission will apply from the date on which the determination is published (27 January 2012) until 30 June 2014. The expiry of the determination coincides with the expiry of the Commission's current electricity standing contract price determination. The Commission intends to review the FiT premium at the same time it reviews the standing contract price to apply from 1 July 2014.

[7] The new scheme was introduced via the Electricity (Miscellaneous) Amendment Act 2011, which came into force on 28 July 2011.

1.1 Process for Review

To commence the process for determining the FiT premium, an Issues Paper was released on the Commission's website for public consultation on 26 August 2011. Submissions to the Issues Paper closed on 23 September 2011. The Commission received 13 written submissions in response to the Issues Paper.

The second stage of the process for determining the FiT premium, which involved the release of a Draft Determination on the Commission's website for public consultation, occurred on 7 November 2011. Submissions to the Draft Determination closed on 7 December 2011.

The Commission received 11 written submissions in response to its Draft Determination from:

- AGL
- Alinta Energy
- Australian PV Association
- Australian Solar Round Table (plus attachment)
- Clean Energy Council
- Energy Retailers Association of Australia (ERAA)
- Origin Energy
- Private Individual 1
- Private Individual 2
- Tindo Solar
- TRUenergy

The submissions can be accessed on the Commission's website[8]. In making its Final Determination, the Commission has considered all submissions received. Issues raised in the submissions have been dealt with in detail in sections 3 and 4 of this paper.

To assist it in making a determination in respect of the FiT Premium, the Commission engaged an independent consultant, ACIL Tasman, to provide expert advice in relation to the value to retailers of solar PV exports. The ACIL Tasman report to the Commission is available on the Commission's website. The Commission also sought advice from the Australian Energy Market Operator (AEMO) in regards to the settlement of the National Electricity Market and how these procedures affect retailers with solar PV customers.

[8] http://www.escosa.sa.gov.au/projects/167/2011-determination-of-solar-feed-in-tariff-premium.aspx

2 REGULATORY FRAMEWORK

2.1 Power to Determine the FiT Premium

Upon the enactment of the Electricity (Miscellaneous) Amendment Act 2011, a number of changes were made to the feed-in scheme set out in Division 3AB of the Electricity Act and to section 35A of the Electricity Act, which confers upon the Commission various price regulation powers.

In addition, transitional provisions of the Electricity (Miscellaneous) Amendment Act 2011 came into effect which, in addition to providing the Commission with the power to make the initial determination in relation to the FiT premium, provide that the initial determination:

- is to be made after the Commission had adopted such processes as the Commission thought fit;
- may be based on such principles, policies and other factors as the Commission thought appropriate;
- will be made by the Commission by notice in the gazette;
- will be binding on the electricity entities to which it is expressed to apply; and
- must be made within 6 months from the commencement of the transitional provisions taking effect.[9]

The Commission has also been given the power to make subsequent determinations in respect of the FiT premium pursuant to section 35A of the Electricity Act and Part 3 of the ESC Act.

2.2 The Feed-in Scheme as set out in the Electricity Act

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

As has been the case since the scheme was first introduced in 2008, ETSA Utilities 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 customer.

[9] Refer section 4(2) of the transitional provisions of the *Electricity (Miscellaneous) Amendment Act 2011*.

The recent amendments to the feed-in scheme have changed the amounts that ETSA Utilities is required to credit to customers, which is dependent upon the date on which a customer connected, or had approval to connect, their PV generation unit to ETSA Utilities' distribution network.

Customer's that connected[10] their PV generation unit prior to 1 October 2011, will continue to qualify for a credit from ETSA Utilities of 44c/kWh of electricity fed into the network. Those customers will receive that credited amount until 30 June 2028. Any customer that connected[11] (or connects) a PV generation unit between 1 October 2011 and 30 September 2013 will receive a credit from ETSA Utilities of 16c/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 ETSA Utilities.

In addition to the amendments to the amount to be credited by ETSA Utilities under the feed-in scheme, a new 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 Final Determination as the FiT premium) for electricity fed into the distribution network. The new obligation on retailers is discussed in more detail below.

2.2.1 New 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 terms of the contract they may have entered into with an electricity retailer for the sale of electricity through their connection point.

[10] Includes customer's that had approval to connect their PV generation unit prior to 1 October 2011.

[11] Includes customer's that had approval to connect their PV generation unit prior to 1 October 2013.

The new obligation, which is set out in section 36AD(1) of the Electricity Act[12], is to be imposed on electricity retailers as a condition of their South Australian retail licence. Section 36AD(1) 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 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) 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[13] who feeds electricity generated by a qualifying generator[14] into a distribution network[15]; 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 When the FiT Determination takes effect

The transitional provisions of the Electricity (Miscellaneous) Amendment Act 2011 (which are contained within the Electricity Act) also provide additional instructions

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

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

14 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.

15 Means a distribution network that supplies electricity to more than 10,000 domestic customers.

in respect of when the new obligation placed on retailers under section 36AD(1) of the Electricity Act is to take effect. Ordinarily, 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.

However, in this case, the effect of sections 4(2)(c) and (e) of the transitional provisions, is that the FiT premium determination will take effect at the time it is published in the South Australian Gazette (i.e., it cannot take effect at another time otherwise determined by the Commission). In light of the requirement for the determination to be made within 6 months of the commencement of the transitional provisions (being 28 July 2011), the determination must be gazetted by no later than 28 January 2012. Essentially, the transitional provisions displace section 26(8) of the ESC Act and the normal rules relating to when a price determination is to take effect do not apply.

Accordingly, the Commission's FiT premium determination, and the obligation on retailers to pay the FiT premium to all qualifying customers, will take effect on and from Friday 27 January 2012, the date on which the Commission intends to publish a notice of the determination in the Government Gazette.

2.2.3 Term of the initial FiT Premium Determination

While the Commission has some discretion in deciding the length of a price determination period, the Commission has decided that the initial FiT premium determination will expire on 30 June 2014. This will align the FiT premium determination with the term of the current electricity standing contract price determination.

The Commission notes that it considered the option of undertaking an annual review of the value to retailers of electricity fed into the network, such that a separate FiT determination would be made to apply from 1 July each year. While this approach would have the benefit of ensuring that the latest wholesale cost information could be incorporated into the amounts set annually, it would also impose significant additional regulatory and administrative costs. The Commission considered that these costs would outweigh the benefits of utilising the latest cost information and so has determined that the initial FiT premium determination will remain in effect until 30 June 2014.

It is important to note, however, that if it becomes evident that the value to retailers of electricity fed into the network has materially changed at any time during the FiT premium determination period, the Commission has the power to vary or revoke the initial FiT premium determination through a separate review, pursuant to section 26(8) of the ESC Act.

2.2.4 Annual adjustment of the initial FiT Premium Determination

In respect of the annual adjustment of the FiT premium, the Commission acknowledges the argument for setting a single amount to apply until 30 June 2014, in that it may be administratively simpler for retailers. However, the Commission has decided that the FiT Premium will be adjusted each financial year in line with the amounts set out in section 5.2 of this paper, to ensure that energy prices, inclusive of the FiT premium, can remain cost-reflective. If a single amount were to apply until 30 June 2014, there would be a period where the premium is above the cost to retailers, followed by a period where the premium is below-cost. The Commission believes that it is important that prices are cost-reflective to ensure that the competitive retail market is not distorted. An increasing FiT premium each financial year will assist in achieving that objective.

2.2.5 Summary of amounts payable under the amended Feed-in Scheme

Table 2 below summarises the feed-in payment amounts that will be payable under the amended feed-in scheme set out in Division 3AB of the Electricity Act.

Table 2: 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
From 1 October 2013	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.

Notwithstanding the requirements of the ESC Act, the transitional provisions of the Electricity (Miscellaneous) Amendment Act 2011 provide that, in making the initial FiT premium determination, the Commission may apply any processes and principles that the Commission sees fit. Accordingly, the Commission may choose not to take into account any of the objectives listed in section 6 of the ESC Act, or apply any of the pricing-related factors specified in section 25(4) of the ESC Act, even though these objectives and factors ordinarily provide an overarching framework for the Commission when undertaking its pricing functions.

Despite this displacement of the requirements of the ESC Act in respect of the initial FiT premium determination to be made by the Commission, the Commission believes that the objectives and factors set out in the ESC Act are still relevant to the determination of the FiT premium, and should still be considered as guiding principles. In particular, the Commission's primary objective, which is to protect the long-term interests of South Australian consumers with respect to the price, quality and reliability of essential services, is as relevant to this determination as it is to the Commission's other price determination functions. The Commission therefore has had regard to the objectives and pricing related factors set out in sections 6 and 25(4) of the ESC Act in determining the FiT premium as discussed in more detail in section 4 of this paper.

Furthermore, the Commission's price regulation functions as set out in section 35A of the Electricity Act are also relevant in informing the methodology employed by the Commission in making the initial FiT premium determination as the Commission will be required to have regard to the requirements of the ESC Act and Electricity Act when making subsequent FiT premium determinations.[16] Accordingly, in addition to the reasons outlined above, it is prudent for the Commission to take into account the objectives and factors set out in the ESC Act and the Electricity Act in making the initial FiT premium determination to ensure consistency between FiT premium determinations and to mitigate the risk of any future price shocks to consumers or retailers.

[16] The transitional provisions will cease to have effect once the initial FiT premium determination has been made.

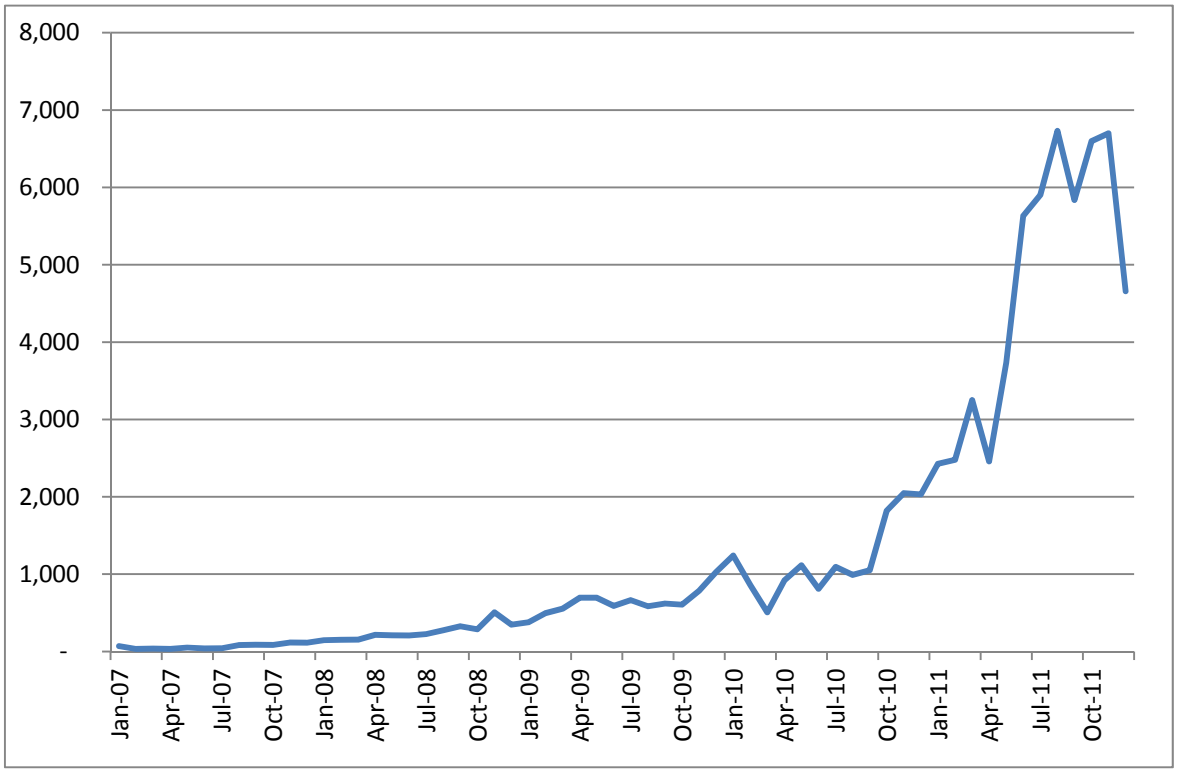
3 BACKGROUND TO THE CURRENT FEED-IN SCHEME

The Commission has obtained data from ETSA Utilities on the number, capacity and output from both installed PV generation units and units approved for installation.

ETSA Utilities advised the Commission that it does not know the installed capacity of each PV generation unit connected to its network, only the average capacity approved, as there is no link created in its systems from the approval to the actual installation of the PV system. Consequently, ETSA Utilities is only able to estimate the capacity of the units connected to its network. As at 30 December 2011, ETSA Utilities estimated that there were around 83,741 premises with solar PV cells with a total output of approximately 195 MW.

Figure 1 shows the rapid increase in customer PV connections since around early 2010, off a low base in the early years of the scheme. The number of connections peaked in November 2011, at around 7,000 for the month.

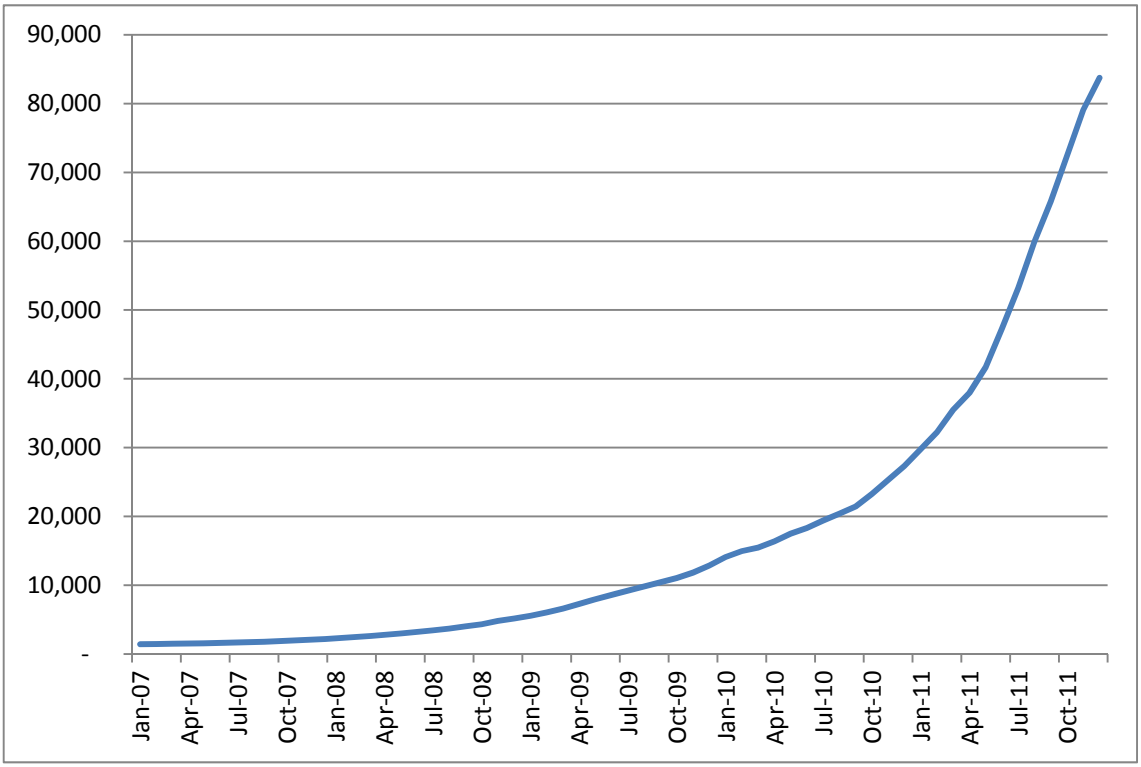
Figure 1: Number of new PV systems connected monthly by ETSA Utilities



Source: ETSA Utilities

Figure 2: Total PV systems connected by ETSA Utilities shows the total number of solar PV systems connected to ETSA Utilities distribution network over the past 5 years. Approximately 54,000 solar PV systems were connected in 2011, which is around 65% of the total connected as at December 2011.

Figure 2: Total PV systems connected by ETSA Utilities



Source: ETSA Utilities

3.1 Billing, Metering and Settlement Arrangements

In South Australia each electricity customer has two separate contracts in relation to the provision of electricity: a connection and supply contract with the operator of the distribution network (ETSA Utilities) and a sale contract with the retailer of the customer's choice. All matters relating to the provision of network services by ETSA Utilities, e.g. customer connections and network reliability, are dealt with through the connection and supply contract. The provision of retail services, including the sale of electricity that is consumed by a customer and the provision of associated services, e.g. billing, are covered by the retailer's sale contract.

3.1.1 Meter Types

Meters that can be installed at a customer's premises to account for the import and export of electricity, broadly fall into two categories, interval meters and basic meters.

An interval meter (smart meter) records the amount of electricity imported or exported on a half hourly basis. This means that it is possible to tell how much electricity was used during each part of the day.

Basic meters only have the ability to measure the total amount of electricity used in a billing period and cannot distinguish between the times at which energy is consumed. These meters are also known as accumulation meters because they measure accumulated data.

In South Australia less than 2% of solar PV customers have interval meters (smart meters) installed at their premises.[17] The remaining customers have basic meters that measure total electricity consumption and total electricity exports every three months or so.

3.1.2 Net Metering

As previously noted, feed-in tariff schemes can operate on either a net or a gross basis. Under a "net" arrangement, metering of the electricity generated by the solar PV system is configured so that electricity produced by the solar PV system is firstly directed into the house and used to meet the household electricity demand. Any surplus electricity, after consumption within the house, is exported to the electricity network. Feed-in payments only apply to the electricity exported by the PV system, not to any PV generation used within the house.

Under a "gross" arrangement, metering of electricity generated by the solar PV system is configured so that the total amount of electricity produced by the solar PV system flows directly to the electricity network. Electricity used within the house is imported from the grid and feed-in payments apply to the total amount of PV generation.

The South Australian FiT Scheme is a net metering scheme.

Customers may maximize their benefit by load-shifting. At peak generating times when the panel is producing the most electricity, customers can reduce their household usage by switching off non-essential appliances (e.g. washing machines, clothes dryers, televisions), and instead opting to use them at times when the panel isn't producing (e.g. early morning or at night). This behaviour increases the amount of electricity fed-into the network by the household for a net metering arrangement.

[17] Advised by ETSA Utilities on 20 September 2011.

3.1.3 Settlement Arrangements

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. The manner in which PV generation affects the settlement of the wholesale electricity market is illustrated through the following examples.

Customer without Solar PV Cells

In this example, a small customer has an annual consumption of 5500kWh. If the customer did not have solar PV cells the customer would:

- Draw 5500 kWh from the distribution network each year to meet its needs.

The customer's distributor would:

- Supply 5500 kWh electricity from the network; and
- Send metering data to the market operator.

The market operator would:

- Calculate the wholesale electricity cost on 5500 kWh, payable by the retailer; and
- Forward metering data to the retailer for customer billing.

The customer's retailer would:

- Bill the customer for 5500 kWh under a retail tariff; and
- Pay the costs associated with purchasing 5500 kWh wholesale electricity.

Note: This example ignores the effect of losses. Refer section 4.3.

When a customer has solar PV cells the arrangement is more complex. When the solar PV cells are producing electricity the customer will either:

- Consume all electricity generated by the solar PV cells while drawing top-up electricity from the network; or will
- Consume part of the electricity produced by the solar PV cells while exporting surplus electricity to the network.

Therefore each year a customer is likely to:

- Consume electricity that they produce themselves;
- Consume electricity from the distribution network; and

- Supply electricity to the distribution network (provided their solar PV cells are of sufficient capacity).

Customer with Solar PV Cells & Feed-in Tariff

In this example a small customer with solar PV cells also has an annual consumption of 5500 kWh. The customer:

- Generates 3000 kWh of solar electricity;
- Uses 2000 kWh solar electricity in their own home;
- Supplies 1000 kWh to the distribution network (3000 kWh solar generated less the 2000 kWh of solar used in their own home); and
- Draws 3500kWh from the distribution network each year (5500 kWh annual consumption less the 2000 kWh of solar used in their own home).

The customer's distributor will:

- Supply 3500 kWh electricity from the network;
- Receive 1000 kWh solar electricity into the network; and
- Send metering data to the market operator.

The market operator will:

- Calculate the wholesale electricity cost on 2500 kWh payable by the retailer (3500kWh drawn from the network less 1000 kWh supplied to network); and
- Forward metering data to the retailer for customer billing.

The customer's retailer will:

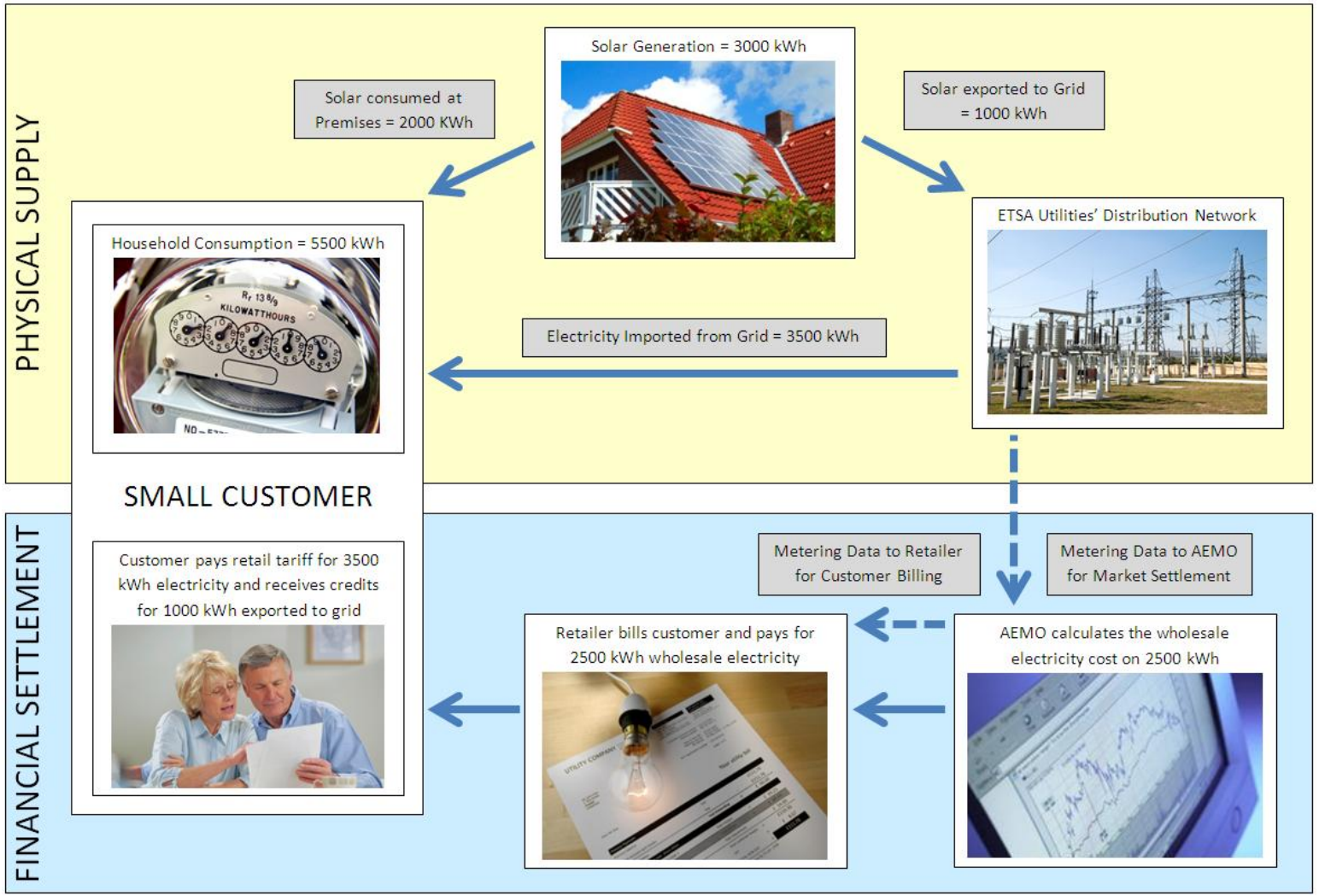
- Bill the customer under a retail tariff for 3500 kWh drawn from the network (which includes distribution costs);
- Provide FiT credits[18] for the 1000 kWh fed into the network; and
- Pay the costs associated with purchasing 2500 kWh wholesale electricity.

Note: This example ignores the effect of losses. Refer section 4.3.

Figure 3 on the following page shows diagrammatically how this arrangement applies to a customer with solar PV cells who received a feed-in tariff.

[18] At present this comprises a 44c/kWh or 16c/kWh credit (provided by retailers as agent for the distributor, ETSA Utilities) and any voluntary retailer payment.

Figure 3: Solar PV Exports and Settlement Arrangements



Where no FiT premium is present, retailers receive the benefit of electricity supplied into the network by solar PV cells. The retailer's wholesale electricity costs are reduced but the customer is billed for the total amount of electricity drawn from the network. In the above example this would mean that the retailer pays for 2500 kWh electricity but is able to charge the customer for 3500 kWh electricity. The introduction of a FiT premium means that customers receive compensation for the 1000 kWh electricity that they feed into the network which reduces the retailer's wholesale electricity cost.

4 VALUE OF PV EXPORTS

As discussed in more detail below, the methodology adopted by the Commission to determine the FiT premium requires the Commission to have regard to the "fair and reasonable" value to retailers of the electricity fed into the network. Accordingly, the Commission needs to quantify the net benefits to retailers of the electricity exported from eligible PV generators. These benefits include the value of electricity as well as other costs and benefits. Both need to be considered to determine the FiT premium.

4.1 Methodology

The key issue that the Commission must consider is the methodology used for determining the FiT premium. Over time, the number of customers choosing to install solar PV systems has increased and retailers have developed market contracts that account for the feeding-in of electricity into the network. Some retailers currently offer a voluntary FiT premium under their market contracts (in the order of 6 to 8 cents per kWh of electricity exported).

4.1.1 Cost Components of Price

Electricity tariffs are made up of the following components:

- Transmission charges (paid to ElectraNet);
- Distribution charges (paid to ETSA Utilities);
- 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 ETSA Utilities and are regulated by the Australian Energy Regulator (AER)[19]. Retailers include these charges on the customer's bill as a way to collect the amounts due to ElectraNet and ETSA Utilities. 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 generators 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.

[19] www.aer.gov.au

The Commission's task is to make an initial determination in relation to the credits payable by a retailer for the feeding in of electricity into a distribution network[20]. 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 to retailers in terms of a retailers controllable costs only.

Retailer controllable costs are:

- the price that the retailer pays for wholesale electricity; and
- the costs a retailer incurs in running its retail business.

Therefore, the Commission's will determine the value of solar PV exports in relation to these costs only. Any impact on transmission charges and distribution charges have been excluded for the reasons discussed above.

In respect of the network, the Commission notes that solar PV cells may provide some benefits. However, there is some evidence to suggest that PV systems actually increase network costs[21]. 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 for 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.

4.1.2 Submissions

Submissions to the Issues Paper and Draft Determination provided a range a views on an appropriate methodology, with retailers generally advocating a "light handed" approach possibly involving a floor or benchmark prices, and some other stakeholders supporting more "heavy handed" approaches, involving a determination of the avoided costs to retailers.

In response to the Commission's Issues Paper, retailers submitted to the Commission that the voluntary FiT offered by retailers includes the value of electricity and competitive premiums. For example, AGL stated that retailers use this solar tariff premium as a marketing tool in order to increase the competitiveness of market contract offers for customers. It was also suggested that retailers consider branding and marketing benefits when setting the voluntary FiT amount.

Retail electricity prices (excluding distribution and transmission costs) are made up of three components: wholesale electricity costs; retail operating costs and a retail margin. Assuming wholesale electricity costs remain constant, then for a retailer to be able to offer an extra amount (to increase the competitiveness of market contract offers) the retailer would either need to:

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

[21] ACIL Tasman, The fair and reasonable value of exported PV output, December 2011, p.34.

- reduce the amount of its retail margin;
- have reduced retail operating costs; or
- increase its revenue by increasing retail tariffs.

In a competitive market, a retailer has discretion regarding discounts and benefits applied to all market contracts it offers. This applies to both customers who have solar PV cells and those who do not. Many retailers offer discounted tariffs compared to the electricity standing contract price. In addition, retailers have offered benefits such as magazine subscriptions and sports club memberships. The inclusion of an additional benefit payable to solar PV generators, as a method of attracting their business, simply represents innovation in this area.

These further discounts may still be paid to solar PV generators on top of the FiT premium as determined by the Commission if the retailer sees fit. Retailers did not advise the value of the 'competitive premium' compared to the value of electricity in the 6 to 8 cents per kWh voluntary FiT currently offered in the market. However if a large value is included by way of a 'competitive premium' this may suggest that the value of electricity has been undervalued by some retailers.

It was also suggested to the Commission by Alinta Energy that solar PV customers provide a benefit in terms of 'branding and marketing" such that their retail operating cost is reduced in this area. The assertion is that this benefit is currently returned to solar PV customers as part of the voluntary FiT of around 6 to 8 cents.

Presumably branding and marketing benefits would be triggered by all customers with solar PV cells and not just those that feed electricity back into the network. Since the voluntary FiT premium is only paid on exported electricity, this notion suggests that large electricity exporters provide more of a branding and marketing benefit than those customers with lower exports or no exports at all. On this basis, the Commission's view is that the presence of a direct link between solar PV exports and a reduction in 'sales and marketing' expenses is uncertain.

Section 4.7 of this final determination discusses retail operating costs in relation to solar PV customers. The Commission has not included adjustments to account for changes in retail operating costs in relation to solar PV customers as, in the absence of any persuasive evidence to the contrary, it believes these to be small and likely to be recovered from all customers nonetheless.

In response to the Draft Price Determination, Origin Energy, TruEnergy, Alinta Energy and the ERAA, were predominantly concerned with how the FiT premium may affect competition in the SA retail market.

Retailers suggested that:

- given the existing levels of competition, the market is best positioned to determine the FiT premium;
- mandating a price is likely to stifle the development of competitive offerings;
- if the FiT premium is set too high then solar customers will become unprofitable;

- retailers may avoid supplying solar customers or terminate contracts if the retailer cannot recover its costs; and
- the FiT premium envisaged by the Draft Determination may reduce the scope for competition among retailers as it diminishes retailer flexibility.

Retailers also made the following comments regarding current voluntary payments made to solar customers.

- AGL considers the FiT premium to be within a reasonable range (it currently offers 8c/kWh voluntarily).;
- Origin Energy confirmed that the voluntary amount that it pays (currently 6c/kWh) reflects the value of exported electricity to a retailer; and
- TruEnergy advised that it would prefer the 2011/12 FiT premium amount to be 6c/kWh (which is the amount it currently offers voluntarily) as this would avoid the need for it to make billing upgrades.

In considering the concerns raised by retailers it is necessary to consider the relationship between the market for retail customers and the market for customers with PV generation. The arguments made by retailers infer that the former market may be distorted by the payment amounts set for the latter market.

Competition in the electricity retail market in SA has been seen by the Australian Energy Market Commission (AEMC), in its 2008 review of competition, and by the Commission in its 2010 review of standing contract prices, to be effective[22]. In contrast, the market for customers with PV generation is considered to be relatively immature, with only three retailers offering voluntary FiTs of 6-8c/kWh, and retailers generally experiencing difficulties in serving these customers (eg. due to shortcomings of billing systems). It does not appear that retailers are actively competing for solar customers.

The Commission's analysis indicates that solar PV exports are of value. Retailers have generally acknowledged that there is a positive value of energy exported. In a competitive market, it would be expected that this value would be passed through to consumers.

In this context, the market for purchasing solar PV exports could be viewed as not being competitive as only a small number of retailers are reflecting that value in their market offers. If the competition for solar customers is considered ineffective, there may be an argument for regulatory intervention, to ensure that all customers receive a fair and reasonable value for electricity fed into the network.

However, it is also important to consider the impact of the FiT premium on electricity retail competition generally. Customers with PV generation represent a growing proportion of the overall retail market and if a FiT premium is set above the true value to retailers, it is likely that margins available for non-PV customers will be used to subsidise the costs of supplying PV customers.

In the Draft Determination, the methodology adopted by the Commission was to set the FiT premium at a level which was the Commission's best estimate of the value to retailers. The alternative is to intentionally set an amount lower than this estimate to allow for competition between retailers.

[22] http://www.escosa.sa.gov.au/projects/143/2010-electricity-standing-contract-price-path-inquiry.aspx

In making this Final Determination, the Commission considered whether to maintain the approach undertaken in the Draft Price Determination, i.e. setting the FiT premium based on its best estimate of the value to retailers of electricity exported, recognising that competition for solar customers is not yet effective. Alternatively, the Commission again considered setting a FiT premium that is below its best estimate of the value of energy exported to ensure that there is no detrimental impact on retail competition generally.

The Commission's concern over the second approach is the possibility that retailers will not voluntarily pass on any additional amounts above the minimum benchmark set by the Commission. Customers may therefore receive a payment that is less than the full value of exports to a retailer. Any concerns from customers that they are not receiving a "fair" amount for exports could be refuted given the generous subsidies available from the distributor-paid PV tariff. However, as the ETSA PV tariff is phased out, the value of the amount set by the Commission takes on greater importance to PV customers.

While retailers have expressed concerns over the Commission's proposed approach, those concerns were considered by the Commission in making its Draft Determination and again in its Final Determination. The second approach was explicitly considered by the Commission and was not accepted. The retailer submissions present the same theoretical arguments considered by the Commission and do not present any new evidence on this matter.

Given that the majority of retailers do not offer any voluntary payments to South Australian customers, it is questionable whether retailers would offer any additional amounts in excess of the FiT premium set by the Commission. For this reason, and based on the fact that the Commission did not receive any persuasive evidence from retailers on why this approach is flawed or how a "lower end" FiT premium would encourage competition or innovation, the Commission is of the view that it is appropriate to set the FiT premium at the level which reflects the Commission's best estimate of the value, and not a lower amount.

In support of the Draft Price Determination, AGL submitted that it considers the "FiT Premium to be within a reasonable range." The Clean Energy Council also noted that "the draft report is a fair approach." Furthermore, Tindo Solar believes the price proposed to be "fair and reasonable."

Tindo Solar also commented that "benefits to the network brought by PV installations need to be reflected in the Feed-in Tariff as well." For the reasons outlined in section 4.1.1, an assessment of distribution and transmission charges has been excluded from the Commission's methodology, noting that any benefits will be passed back to consumers though lower distribution tariffs.

The Australian PV Association, Australian Solar Round Table and a private individual submitted to the Commission that the FiT premium should include an amount that compensates PV customers for the "benefits shared with all electricity consumers". These benefits are a result of the operation of the electricity market, rather than direct costs savings as a result of electricity fed back into the grid. Given the manner in which the wholesale market operates, this type of benefit will impact on the wholesale price faced by all retailers and cannot be passed back directly to solar customers.

Benefits shared with all electricity consumers are not only a result of solar PV exports, they are also a result of in-home use. ETSA Utilities estimate around 40-50% of PV generation is used within the home and 50-60% is exported to the network.[23] PV customers who do not export electricity to the network contribute to these indirect benefits but will not receive direct financial compensation for doing so. The Commission's task is to set an amount to credit PV customers for the feeding in of electricity into the network, not to set an amount to be credited to all owners of solar PV units. Including such a benefit within the FiT premium would create asymmetric treatment between PV generation that exported compared to that used in-home. While the Commission is not considering network benefits specifically, the Commission notes that this argument also applies when considering network costs and benefits as a result of solar PV.

Including these additional benefits in the FiT premium, to be paid on a kWh basis, means that large exporters are viewed as providing the most benefit to the market, which may not be the case. If a PV customer reduces their demand by 10kWh or exports 10kWh to the network, the benefit to the market is the same. This is because the reduction in purchases from the "regional reference node" (RRN)is the important factor, not the generation specifically (refer section 4.2.1).

This is also the same for other demand management options such as installing solar hot water, using gas as an alternative to electricity, energy efficient appliances or energy efficient homes. These activities represent an investment by the consumer to reduce their demand. In doing so it is likely that the market would experience a reduction in the wholesale price, due to the overall reduction in demand for electricity. In these instances it is not expected that these customers should receive specific compensation for reducing the wholesale electricity price. It seems inappropriate that PV exporters should acquire a benefit for demand reduction (even only their portion) while other customers practising demand management are excluded.

Assuming that current retail tariffs are determined in accordance with the current wholesale market price, if the Commission was to return these indirect benefits to PV exporters only, this may mean that non-exporters could be subject to higher tariffs. The result could be a perverse scenario whereby a non-exporting solar customer is paying a higher tariff so that an exporting neighbour can receive additional credits. Yet both customers could have contributed equally to the wholesale price reduction, since the reduction in overall demand is a function of PV system size and consumption patterns.

Under the Commission's approach the benefits are still realised by the market, without customers needing to pay more for electricity than they do currently. Non exporting customers, with PV or otherwise, are not disadvantaged as a result of the introduction of PV. This is in line with the Commission's objective to protect the long term interests of South Australian consumers with respect to the price, quality and reliability of essential services.

On that basis, the Commission reaffirms the methodology set out in its Draft Price Determination which has been used to make this Final Price Determination.

[23] Advised by ETSA Utilities on 20 September 2011.

4.2 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. At present, electricity retailers are not required to compensate customers for solar PV fed into the network. As outlined above in section 4.1, 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.

Submissions to the Issues Paper discussed the use of wholesale electricity costs in determining the value to retailers of solar PV exports. Different options were suggested such as using an average wholesale price over a 3 month period or applying the values determined in the Commission's 2010 Electricity Standing Contract Price Path Inquiry. The following section details the Commission's methodology in calculating this value.

4.2.1 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 fed into the network by generators who feed it into the electricity network. At the same time, retailers bill customers for electricity consumed at each customer's premises.

The 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 each 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 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. The 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 customers' 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."[24]

If customers have interval meters it is possible to calculate the exact amount of electricity used during each trading interval. AEMO is then 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.

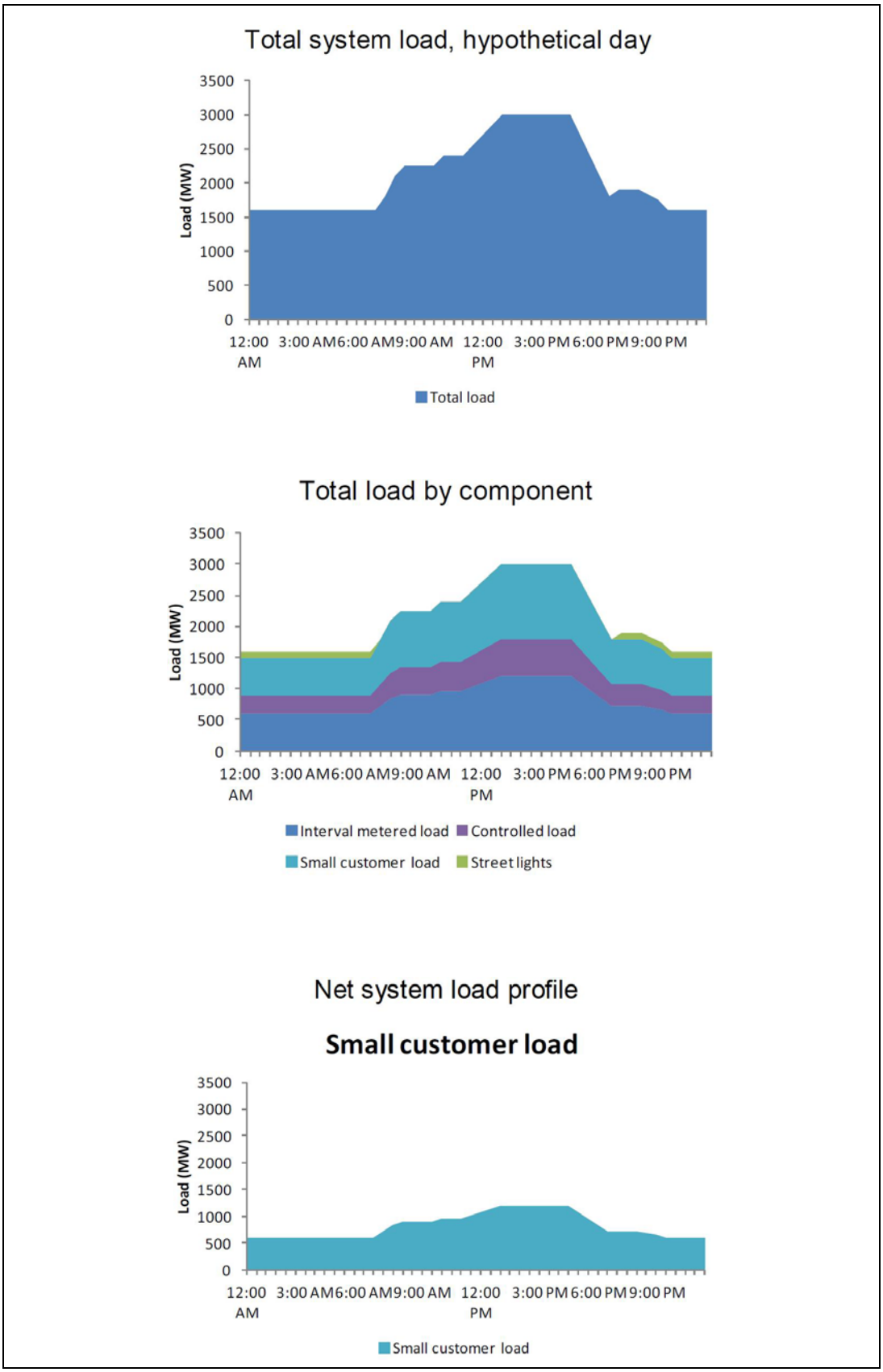
The total amount of electricity consumed in a trading interval less all known interval data is the consumption attributed to customers with accumulation meters. When this calculation is performed for each trading interval during the day it is possible to build up a half hourly profile which represents 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 Tasman presents a diagram of the NSLP for a hypothetical day. Figure 4 below shows each layer of total system load and illustrates how the NSLP is derived by stripping out known consumption loads.

[24] ACIL Tasman, The fair and reasonable value of exported PV output, October 2011, p.6.

Figure 4: Derivation of the Net System Load Profile



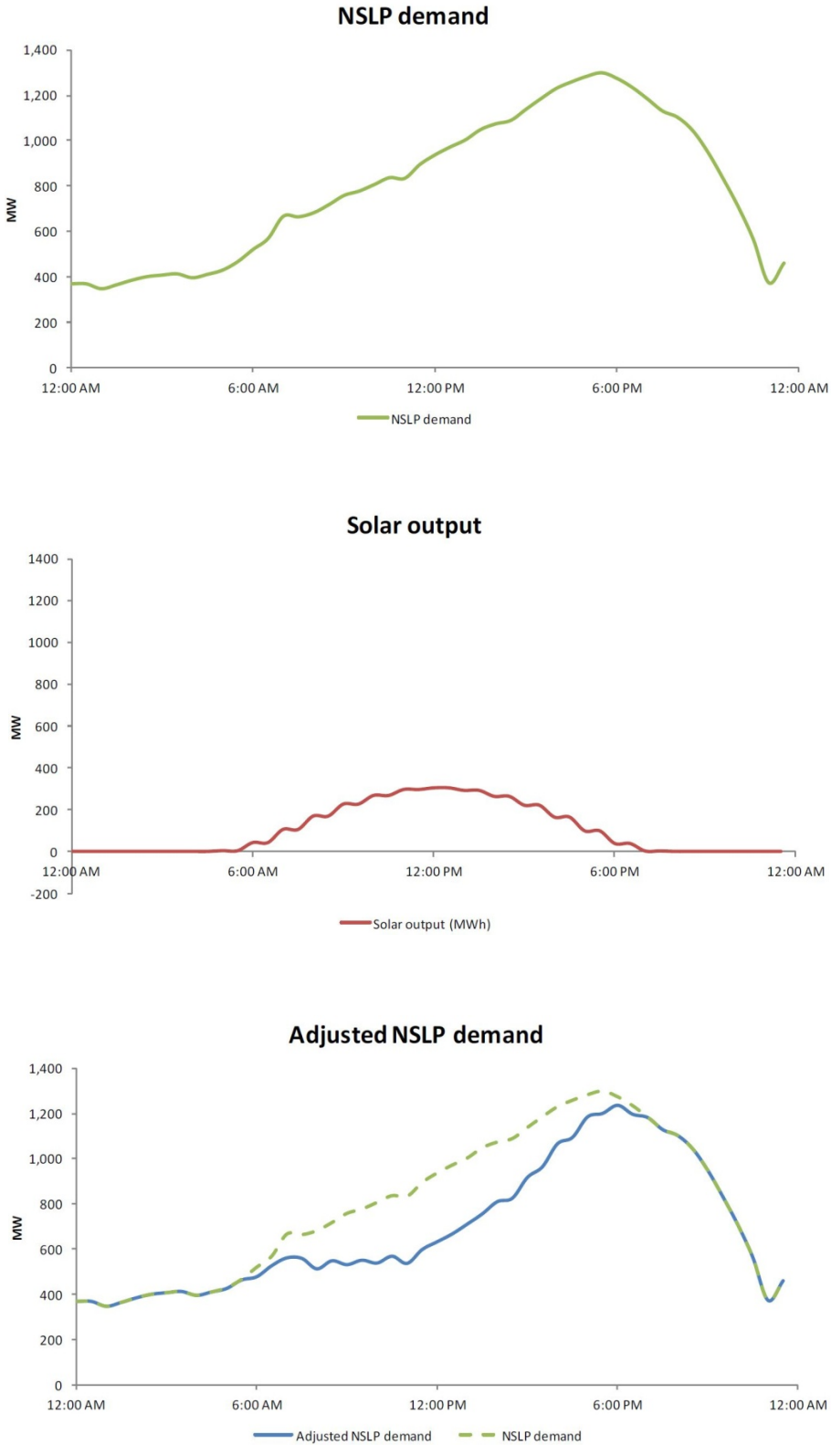
Once the NSLP has been derived, it is possible to calculate the wholesale electricity price payable by a retailer for its customers. All retailers in an area are subject to the same NSLP. The result is that retailers effectively pay an average wholesale electricity spot price for their customers with 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).

Solar PV cells generate 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 5 illustrates the effect that solar PV generation has on the NSLP.

Figure 5: Adjusted NSLP Demand



The flattening of the NSLP has two effects on the settlement of the wholesale electricity market. Firstly, because the NSLP "peak" is reduced retailers are generally subject to lower wholesale electricity prices overall. Secondly, the reduction in demand means that retailers need to purchase less electricity (volume) from the market.

4.2.2 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 flattening 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 inherent in the operation of the NEM. The approximately 84,000 solar PV cells that have been installed in South Australia to date (as at December 2011) would have already had an effect 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 must also consider 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 would involve complex forecasting 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[25].

The link between electricity fed into the network and a reduction in a retailer's costs is therefore 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. The Commission has therefore 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 operation of the market.

[25] ACIL Tasman, The fair and reasonable value of exported PV output, October 2011, p.17.

4.2.3 Reduction in Overall Wholesale Electricity Price

Section 4.2.2 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 Tasman's report notes that "this is reflected in recent prices and therefore in projection based on demand growth from present levels."

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 small 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. The Commission has therefore decided to exclude this effect from its assessment of the fair and reasonable value of PV exports.

4.2.4 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. This point is uncontroversial and was acknowledged by each retailer that made a submission to the Commission's Issues Paper. It was also acknowledged in submissions to the Draft Determination.

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

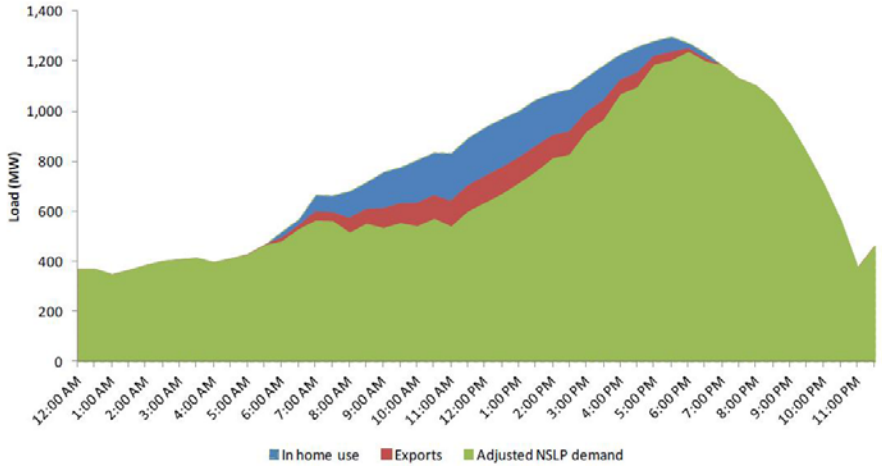
- the NSLP; and
- the wholesale spot price in the SA NEM region.

The Commission engaged ACIL Tasman to prepare these projections. The NSLP has been derived by ACIL Tasman using *"historic South Australian NSLPs to construct a projected NSLP for the years 2011-12, 2012-13 and 2013-14, and thereby to predict the NSLP-weighted price of energy in each of those years. In turn, this represents a forecast of the value of exported PV output to electricity retailers over this projection period."* An adjustment was made to reflect the additional electricity consumption that occurred during the historic period which was supplied by solar PV cells. ACIL Tasman *"further analysed the historic load data measured by AEMO to reflect the fact that some additional electricity consumption occurred in the period, but was not metered and recorded in the observed data set as it was supplied by small-scale PV systems."*

In addition, ACIL Tasman'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. The report states that *"a stylised estimate of solar PV output for each hour was developed using ETSA estimates of future PV penetration levels, and netted out of the underlying NSLP demand profile to derive the final synthetic NSLP used to estimate price outcomes."*

The derivation of a NSLP for 2011-12, 2012-13 and 2013-14 combined with an estimate of solar PV output for those years, means that it is possible to calculate the change in shape to the NSLP as a result of solar PV exports, refer Figure 6.

Figure 6: Change in NSLP load shape due to solar PV exports



A detailed explanation of this methodology can be found in ACIL Tasman's Report *Appendix B – Methodology for projecting the NSLP.*

To calculate the value to a retailer of this electricity it is necessary to forecast the wholesale electricity spot price for 2011-12, 2012-13 and 2013-14. ACIL Tasman prepared a projection of the wholesale spot price of electricity in South Australia using *PowerMark* which is its proprietary 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.

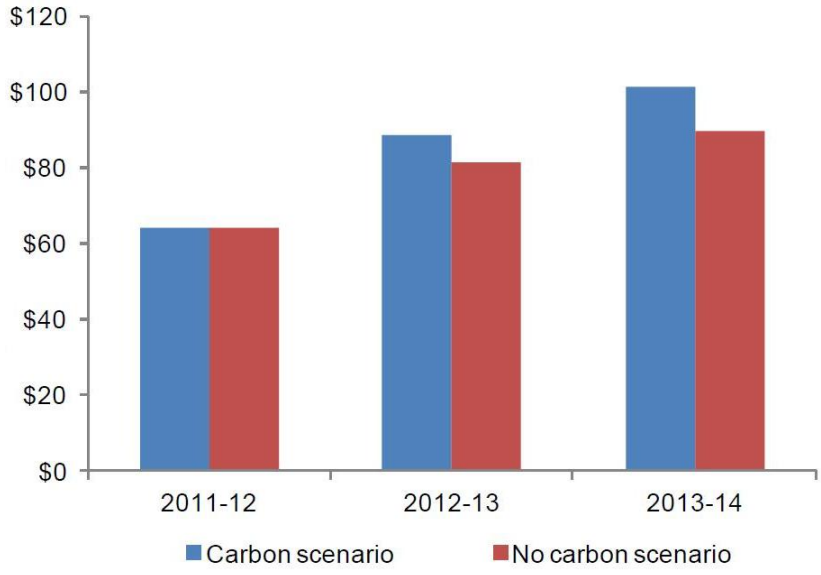
A relevant factor to the Commission's determination process was the passing of the Australian Government's Clean Energy Bill 2011 through the Senate on 8 November 2011. The Government has stated that the legislation:

"will put a price on carbon pollution, promote investment in renewable and clean energy technologies and support action to reduce carbon pollution."[26]

A fixed carbon price of $23 a tonne will apply from 1 July 2012 to 30 June 2015. Thereafter, a flexible carbon price will apply. Accordingly, a 'carbon' scenario has been applied to forecast the FiT premium.

The resulting wholesale spot price is shown in Figure 7 below, both with and without a carbon price. These wholesale electricity spot prices represent the annual average rate payable for electricity consumed by customers with accumulation meters in South Australia if solar PV generation did not exist. ACIL Tasman's report states that "the projections of the wholesale spot price of electricity and the NSLP are each a series of half hourly values, price and demand respectively, for one year blocks. These were combined to produce the projection of the NSLP-weighted prices shown[27]."

Figure 7: NSLP-weighted price for South Australia (nominal $ per MWh)



[26] Refer http://www.cleanenergyfuture.gov.au/legislation-passes-house-of-representatives/

[27] ACIL Tasman, The fair and reasonable value of exported PV output, October 2011, p.20. "The NSLP weighted price is the sum-product of the NSLP and the wholesale price, both on a half hourly basis, divided by the sum of the NSLP."

ACIL Tasman's report explains that:

- *The key driver of increasing prices under the No carbon scenario is a general tightening of the supply-demand balance in response to growing demand. Recent entry of new plant has tended to suppress prices below the 'new entrant level' (the level sufficient to support investment in new plant) but ongoing demand growth in SA and other NEM regions causes prices to rise towards this level over time. By 2013-14 we project new entrant gas-fired and wind plant entering in response to the tightening supply-demand balance and firming prices.*
- *Further, new entrant gas-fired plant is generally modelled as paying higher gas prices than incumbent gas-fired generators, reflecting expected tightness in gas contract markets.*
- *The moderate increase due to carbon pricing on top of this underlying increase reflects the relatively low-emissions intensity of generation in the SA NEM region, which includes significant quantities of gas-fired and wind generation."*

A detailed explanation of this methodology can be found in ACIL Tasman's Report *Appendix C – Powermark.*

As explained in section 4.2.2, the introduction of solar PV flattens the shape of the NSLP. Applying the change in load shape to the forecast wholesale electricity spot price allows 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. The result is shown in Table 3 below.

Table 3: Value of Wholesale Electricity Cost (nominal cents per kWh)

2011-12	2012-13		2013-14	
Both Scenarios	**Carbon Scenario**	**No Carbon Scenario**	**Carbon Scenario**	**No Carbon Scenario**
6.4	8.9	8.1	10.2	9.0

4.3 Losses

The Commission's Issues Paper asked the question 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.

4.3.1 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 in section 4.2.4, 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 avoidance reduction of direct costs.

The avoidance of the cost of electricity was quantified in section 4.2.4. What this analysis did not take into account was 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 Tasman, *"if wholesale electricity incurs 10% greater losses in reaching the point of consumption than exported PV output, 100 kWh of exported PV output would displace 110 kWh of wholesale electricity purchases."* 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 Tasman 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%[28].

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 doesn't 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.

[28] ACIL Tasman, The fair and reasonable value of exported PV output, October 2011, p.23.

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 4 below.

Table 4: Avoided Losses as a result of solar PV exports

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

Therefore the total wholesale electricity cost value to the retailer of exported PV output is based on 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 in section 4.3.2 below.

In calculating the benefit to retailers of avoided losses the published loss factor of 7.97% has been used for 2011-2012 and 8% has been used for 2012-2013 and 2013-2014. The additional benefit to retailers is shown in Table 5.

Table 5: Value of Avoided Losses (nominal cents per kWh)

2011-12	2012-13		2013-14	
Both Scenarios	**Carbon Scenario**	**No Carbon Scenario**	**Carbon Scenario**	**No Carbon Scenario**
0.6	0.8	0.7	0.9	0.8

4.3.2 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 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.

It is therefore 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 reduce costs for all electricity consumers.

4.4 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 $12,500 per MWh is set which is significantly more than the average wholesale electricity price in the NEM. 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 Tasman 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 ACIL Tasman's Report *Appendix A.*

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.

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 discussion regarding wholesale spot prices in section 4.2.3, 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.

ACIL Tasman's analysis in *Appendix A – Relationship between pool prices and hedge contracts* demonstrates how this fixed contracting position delivers costs or benefits to the retailer equal to the spot price. ACIL Tasman notes in its report:

"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. This means that where a retailer purchases a lower volume of electricity from the wholesale market due to exported PV output 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."

In response to the Commission's Draft Price Determination, Alinta Energy raised concerns that "ACIL Tasman has not given sufficient consideration to the way in which retailers contract for their expected load in forming a view as to the price a retailer should pay its solar customers for this energy."

Alinta Energy's submission commented that output from solar PV is a non-firm hedge for retailers and as such cannot be relied upon as a source of reliable electricity generation for its customers. Alinta Energy stated that the retailer would need to purchase "firm" cover, or an insurance product, to ensure that it was not exposed to a pool price of up to $12,500/MWh in the event that the PV system did not produce electricity when required. The inference is that solar PV generation causes additional costs to retailers in terms of hedging.

Whereas ACIL Tasman discussed the risk to retailers based on a given contractual position (ie. based on a given forecast of demand), the issue raised by Alinta Energy relates to the potential for solar PV to create additional uncertainty over the amount of energy that must be supplied by the retailer and the amount of hedge cover required. Any uncertainty over the amount of energy generated by solar PV will translate into uncertainty over the total energy load that must be covered by a retailer under hedging contracts. In this respect, retailers must consider solar PV in the same way as they consider variability in consumption more generally. If a retailer overestimates the amount of energy generated by solar PV, the amount of energy to be purchased from the wholesale market will be underestimated and, consequently, so will the amount of hedge cover required. The opposite would be true if a retailer overestimated the amount of solar PV generation.

Considered in this light, the Commission does not believe that solar PV generation results in additional hedging costs to retailers. Rather, solar PV generation provides a non-firm benefit to retailers, as it has the potential to reduce the amount of hedge contracts the retailer may purchase relative to a situation where solar PV does not exist. To the extent that a portion of total installed solar PV generation can be relied upon to meet customer demand at any point in time, the total amount of hedge cover required by a retailer will be reduced by that portion. The important element of this discussion is that hedging costs must be considered in comparison to the costs incurred by a retailer if no solar PV generation exists. In the absence of solar PV, retailers must manage the risk of

overestimating or underestimating total demand and there is no reason to believe that the additional of solar PV materially changes that risk.

Alinta Energy's submission also notes that "solar PV represents such a small component of a retailer's wholesale portfolio that it is unlikely that a retailer will take this output into account when hedging its load." The Commission notes that this argument suggests that the volume risk created by solar PV is not significant. Nevertheless, to the extent that any such volume risk exists, there is no reason to conclude that, all else being equal, solar PV increases hedging costs to retailers for the reason previously discussed.

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

4.5 Market & 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.

Market fees are charged on a per MWh basis and each year AEMO publishes the fees that will apply for the forthcoming year. For 2011-2012 market customers with a retail licence (retailers) must pay an additional $0.39 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 Tasman. 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 in section 4.2.4, 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 4.3.1) 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. Similar to the reduction in price described in section 4.2.3, 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, likely 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 therefore 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 Commission's consultant ACIL Tasman has assumed that both market fees and ancillary service fees will increase at 2.5% in nominal terms per year over the projection period. The benefit to retailers from solar PV exports, over this period, is shown in Table 6 below.

Table 6: Value of Market and Ancillary Service Fees (nominal dollar per MWh)

	Scenario	2011-12	2012-13	2013-14
Market Fees	Both	$0.39	$0.40	$0.41
Ancillary Service Fees	Both	$0.49	$0.50	$0.51
Total Fees at RRN	Both	$0.88	$0.90	$0.92
Total Fees incl. Losses Adjustment	**Both**	**$0.96**	**$0.98**	**$1.00**

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

4.6 Green Scheme obligations

As mentioned in Chapter 1, 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 Tasman's description of these schemes 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 providing pre-specified energy efficiency actions, in proportion to their electricity sales.

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*[29] 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 Final 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 difference 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 other customers' 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. The Commission has excluded this item from its assessment of the value of solar PV exports to retailers.

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

4.7 Retail Operating Costs

As explained in section 4.2.1, 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 retailers 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).

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 significantly higher or lower than serving a customer who does not have a PV system. Retailers submitted to the Commission that servicing solar PV customers was more costly than other customer groups. Retailers provided various reasons for this, 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 arguments and, therefore, did not find them persuasive.

There are practical difficulties in identifying the retailer costs associated with solar PV customers, given that they are generally a small part of the retailer's integrated national business. In order to calculate the operating costs for solar PV customers, costs would need to be allocated between various customer types. It is recognised that there are limitations in such an exercise, where allocation bases are often difficult to determine and can be somewhat arbitrary.

The Commission notes that in every customer group (not just solar) there are likely to be customers who require additional support when entering into or maintaining a retail electricity contract. The Commission's approach in its 2010 electricity standing contract price determination was to set an average retail operating cost allowance on a per customer basis. Vulnerable customers (such as the elderly or financially disadvantaged) are likely to require specialist support. In addition some small business customers may be supplied under tailored retail electricity contracts that account for special metering arrangements (such as interval meters or business 2-rate).

It is understood by the Commission that some solar PV customers have experienced difficulties concerning the billing of their consumption and exports. This in itself is not justification for an increased allowance for retail operating cost. Retailers already have established billing and customer management systems that should allow them to bill solar PV customers for their usage and pay the credits due to them under the feed in tariff

scheme. A submission was received to the Draft Decision from a Private Individual who expressed frustration in terms of accurate and timely billing. If deficiencies exist within these systems this is a separate issue that needs to be addressed such that retailers can continue to meet their regulatory obligations.

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. While retailers submitted that PV customers may be more aware than average, the Commission has not been presented with persuasive evidence which illustrates how the feeding-in of electricity into the network specifically contributes to an increased retail operating cost for these customers. 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; 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.

Therefore the only assessment to be performed is that of any incremental cost that will apply from the date the determination is made. The Commission's consultant, ACIL Tasman, noted that *"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."*

Given that advice and the absence of any persuasive evidence to the contrary, the Commission has decided to exclude this from its assessment of the value of solar PV exports to retailers.

4.8 Sharing of Benefits

As considered in the Commission's Issues Paper, some of the benefits 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 customers feed electricity to the network), and benefits that are shared with all electricity consumers due to the operation of the NEM. A summary of those benefits is presented below.

Direct benefits to retailers from PV generation:

- Reduced wholesale electricity cost (refer section 4.2.4);
- Avoided losses (refer section 4.3.1); and
- Avoided market and ancillary service fees (refer section 4.5).

Benefits shared with all electricity consumers:

- Reduced wholesale electricity cost due to flattening of the NSLP (refer section 4.2.2);
- Reduced wholesale electricity price due to overall reduction in demand (refer section 4.2.3);
- Avoided contracting and risk management costs (refer section 4.4); and
- Reduced network loss factors (refer section 4.3.2).

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. Section 4.1 provides further information on the Commission's methodology for determining the benefits to retailers of solar PV generation.

5 FEED-IN TARIFF PREMIUM

The FiT premium can be set in a variety of ways. It may be paid as a flat rate or on a scale. It may change over time or prescribe different rates for different customer segments. In determining the FiT premium, the Commission has considered how the tariff will be applied now and into the future.

5.1 FiT Premium Application

A range of views were provided in submissions to the Issues Paper on the manner in which the FiT premium should be applied. Support was received for a:

- Single FiT premium to apply across all small customers;
- FiT premium that differentiates between customer types (e.g. residential and small business); and
- FiT premium that differentiates between seasons.

Under the Commission's methodology for assessing retailer benefits in relation to settlement against the NSLP, the benefit to retailers of PV exports is the same regardless of whether the customer is a household or small business and is not dependent on the location of the customer. The Commission has therefore decided to set a single FiT premium that will apply uniformly to all small customers that feed electricity into the network.

5.2 FiT Premium Amount

Having considered submissions from interested parties and expert advice, the Commission's draft decision is to set the FiT premium as outlined in Table 7. Figure 8 shows the building of the FiT premium for each year, while Table 8 outlines the total feed-in payment applicable to various customer classes.

Table 7: Feed-in Tariff Premium (nominal cents per kWh and GST exclusive)

	2011-12	2012-13	2013-14
Reduced Wholesale Electricity Cost	6.4	8.9	10.2
Avoided Losses	0.6	0.8	0.9
Market and ancillary service fees	0.1	0.1	0.1
TOTAL	**7.1**	**9.8**	**11.2**

Figure 8: Feed-in Tariff Premium (nominal cents per kWh and GST exclusive)

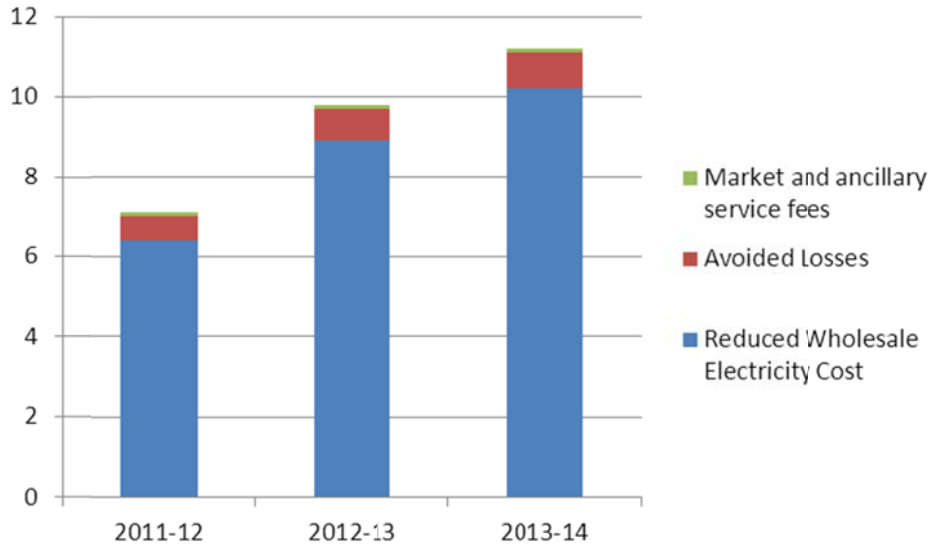


Table 8: Feed-in Tariff Mandated Payments – FiT Premium plus Distributor Payment (nominal cents per kWh and GST exclusive)

		2011-12	2012-13	2013-14
Solar PV Cell Installation / Approval Date	Before 1 October 2011	7.1 + 44 = **51.1c/kWh**	9.8 + 44 = **53.8c/kWh**	11.2 + 44 = **55.2c/kWh**
	1 October 2011 - 30 September 2013	7.1 + 16 = **23.1c/kWh**	9.8 + 16 = **25.8c/kWh**	11.2 + 16 = **27.2c/kWh**
	From 1 October 2013	N/A	N/A	**11.2c/kWh**

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

5.3 Implementation

The Commission's FiT premium determination, and the obligation on retailers to pay the FiT premium to qualifying customers, will take effect on and from Friday 27 January 2012, the date on which the Commission intends to publish a notice of the determination in the Government Gazette (see section 2.2.2). The FiT premium will change thereafter on 1 July each year, in accordance with Part B – Prescribed Amount Final Determination (attached to this Statement of Reasons).

5.4 Commission's Observations on the FiT Scheme

The Commission's primary objective is to protect the long-term interests of South Australians with respect to price, quality and reliability of essential services. While the Commission's price determination is limited only to the FiT premium, the Commission makes the following observations on the FiT scheme in general, in the context of its primary objective.

The current distributor funded FiT scheme provides generous subsidies to existing customers with solar PV, particularly those who are eligible for the 44c/kWh amount. While the Commission supports the decision to phase out the distributor payments for new customers, it notes that the scheme may cost all South Australian energy customers around $90m per annum, which adds around $65 to the average annual household energy bill.

Under the amended legislation, those receiving 44c/kWh also get the FiT premium determined by the Commission, which results in a total FiT amount of 51.1c/kWh from 27 January 2012. This will increase to about 53c/kWh from 1 July 2012. The total FiT amount is over 7 times the current value of wholesale electricity produced by the systems, and over 4 times the value of electricity being generated by wind farms (approximately 11c/kWh)[30].

As discussed earlier in this report, it is unclear as to whether the or not there are additional net benefits from solar PV (e.g. possible net benefits to networks from deferred augmentation and indirect benefits to retailers). The Commission has determined that the FiT subsidy should, therefore, mainly reflect the underlying value of wholesale energy produced, which is well below the value of the actual subsidy on offer.

In relation to the FiT premium specifically, the Commission notes that applying it to customers that already have PV systems does not further the objective of promoting greater uptake of solar. Rather, it simply increases the cross subsidy between PV customers and other customers. The Commission supports the intention of the FiT scheme, which is to reflect the actual benefit received by retailers from the export of PV generation. In an efficient market, such a benefit should be expected to be received by customers. However, during this transitional period where the FiT is being phased out, the addition of the FiT premium provides a windfall gain to existing customers and an unnecessary additional incentive to new customers, given the 16c/kWh FiT that is currently available.

[30] The Commission has estimated the long-run marginal cost of wind generation to be around 11c/kWh, as part of its assessment of the costs of the expanded renewable energy target (refer http://www.escosa.sa.gov.au/library/100616-ERETPassThroughAGL-ReasonsForDecision.pdf)

PART B

- PRESCRIBED AMOUNT -

FINAL DETERMINATION

PART B – PRESCRIBED AMOUNT FINAL DETERMINATION

1 GENERAL

1.1 Application of the Determination

1.1.1 For the purposes of the Electricity Act 1996, this Determination fixes the minimum *prescribed amount* which an *obliged retailer* must credit against the charges payable by a *qualifying customer* for the sale of electricity, for electricity fed into the *distribution network* in excess of the electricity used by the *qualifying customer.*

1.2 Authority

1.2.1 This Determination is made by the *Commission* pursuant to the Electricity Act 1996.

1.3 Term

1.3.1 This Determination takes effect on the *commencement date* and ceases to have effect on 30 June 2014.

1.3.2 The term of this Determination may be varied in accordance with the provisions of Part 3 of the Essential Services Commission Act 2002.

1.4 Definitions and Interpretation

1.4.1 Words and phrases in *italics* in this Determination are defined in accordance with clause 3.1.

1.4.2 This Determination must be interpreted according to the principles in clause 3.2.

1.5 Prescribed amount GST Exclusive

1.5.1 In this Determination the *prescribed amount* is exclusive of *GST*.

1.6 Publication of the Prescribed Amount

1.6.1 Notice of the making of this Determination will be published by the Commission:

(a) in the Gazette and on the *Commission's* website;

(b) in a newspaper circulating generally in the State setting out:

(i) the existence of the *prescribed amount*;

(ii) a general description of the nature and applicability of this Determination; and

(iii) advice as to how this Determination may be accessed.

1.6.2 On and from the *commencement date*, an *obliged retailer* must at all times maintain on its website (in a prominent and readily accessible position) a notice setting out the *prescribed amount*.

1.7 Collection and Use of Information

1.7.1 Any information required to be provided by the *obliged retailer* in accordance with this Determination is required by the *Commission* to be provided pursuant to Part 5 of the Essential Services Commission Act 2002.

2 PRESCRIBED AMOUNT

2.1 The prescribed amount

2.1.1 The *prescribed amount* fixed by this Determination, as applicable from time to time, is specified in the Schedule.

2.1.2 Once the applicable *prescribed amount* is fixed by this Determination, that *prescribed amount* continues to apply until the earlier of the:

(a) date specified in this Determination; and

(b) at the discretion of the Commission, the date on which the *Commission* varies the *prescribed amount* pursuant to section 26(8) of the Essential Services Commission Act 2002 and section 35A(1) of the Electricity Act 1996.

2.2 Application of the Prescribed Amount

2.2.1 On and from the *commencement date*, an *obliged retailer* must credit the applicable *prescribed amount* against the charges payable by a *qualifying customer* for the sale of electricity, for electricity fed into the *distribution network* in excess of the electricity used by the *qualifying customer.*

2.3 Changes to the Prescribed Amount within a Billing Cycle

2.3.1 If, during a *billing cycle*, the applicable *prescribed amount* changes, the *obliged retailer* must calculate a *qualifying customer's* bill on a pro rata basis using the:

(a) old *prescribed amount* up to and including the date of change; and

(b) new *prescribed amount* from the date of the change to the end of the *billing cycle*.

3 DEFINITIONS AND INTERPRETATION

3.1 Definitions

For the purposes of this Determination, a word or phrase not defined below has the meaning given to it by the Electricity Act 1996.

billing cycle	means the regular recurrent period for which a *qualifying customer* receives a bill from an *obliged retailer*.
commencement date	means the date on which the Determination is published in the *Gazette* by the *Commission*.
Gazette	means the South Australian Government Gazette.
GST	means the tax imposed under *GST Law*.
GST Law	has the meaning attributed in the A New Tax System (Goods and Services Tax) Act 1999, and terms related to *GST* such as "ABN", "Input Tax Credit", "Taxable Supply" and "Tax Invoice" have the meaning attributed in the *GST Law.*
obliged retailer	means, the holder of a retail electricity licence issued by the *Commission* under Part 3 of the Electricity Act 1996, or the holder of a retailer authorisation issued by the Australian Energy Regulator under the National Energy Retail Law (as the case may be) and which sells electricity to a *qualifying customer*.
prescribed amount	means the minimum amount fixed by the *Commission* that an *obliged retailer* must credit against the charges payable by a *qualifying customer* for the sale of electricity, for electricity fed into the *distribution network* in excess of the electricity used by the *qualifying customer*.
qualifying customer	means a qualifying customer (as defined in the Electricity Act 1996) which consumes less than 160MWh of electricity per annum through their connection point.

3.2 Principles of Interpretation

Unless the contrary intention appears, these principles of interpretation apply to this Determination:

3.2.1 Words denoting persons include corporations, unincorporated associations, firms, governments and governmental agencies.

3.2.2 A reference to a person includes that person's agents, successors and permitted assigns, persons who have control over any assets of a person and receivers, managers, trustees, administrators and liquidators and similar persons appointed over:

(a) a person; or

(b) any assets of a person;

3.2.3 Headings are only included for convenience and do not affect the interpretation of this Determination.

3.2.4 A reference to a clause, Chapter, Part or Schedule is to a clause, Chapter or Part of or Schedule to this Determination.

3.2.5 A reference to an agreement, document, regulatory instrument or part thereof is a reference to that agreement, document, regulatory instrument or part thereof as varied, replaced or substituted from time to time and includes any Schedules or attachments to the agreement, document or regulatory instrument.

3.2.6 A reference to legislation or regulatory instrument, or to a provision of the legislation or regulatory instrument, includes a modification, re-enactment or re-making of it, a provision substituted for it and a regulation or other statutory instrument issued under it.

3.2.7 The minimum *prescribed amount* fixed under this Determination must be rounded to the accuracy, in terms of the number of decimal places, required by the *obliged retailer's* charging and billing systems.

SCHEDULE

Prescribed Amount *(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 above figures incorporate a fixed carbon price of $23 a tonne as established under the Clean Energy Act 2011, which received Royal Assent on 18 November 2011.