

RESEARCH NOTE 2

Understanding the Small-scale Renewable Energy Scheme

This Research Note has been prepared for the REC Agents Association by Green Energy Markets Pty Ltd. This research note analyses the Small-scale Renewable Energy Scheme (SRES) and provides a simple explanation of how the scheme works and how associated costs are passed on to electricity consumers.

Key points

- The SRES has been successful in stimulating the growth and development of the solar industry in Australia with more than 1.5 million solar systems installed by Australian families to 30 June 2012;
- The oversupply of certificates over the last two years has meant that the Clearing House mechanism has not been required. As the supply/demand balance adjusts the Clearing House will come into play;
- The price of certificates traded in the wholesale market over the last 18 months has averaged just over \$30 which is 25% less than the Clearing House Price of \$40;
- The cost impact of the SRES is set to reduce dramatically over the next year or two, to less than 1% of residential electricity prices as the Solar Credits multiplier gets phased out; and

Australia's Renewable Energy Target

The Renewable Energy Target (RET) was established by the *Renewable Energy (Electricity) Act 2000* and came into effect in April 2001. In August 2009, the RET was expanded to a mandated target of 45,000 GWh of electricity generation from renewable sources (solar, wind, hydro, bio-mass etc.) by 2020. At the time 45,000 GWh represented approximately 20% of electricity demand forecast for 2020.

On 1 January 2011 the RET was split into two components. The first was the Large-scale Renewable Energy Target (LRET) which supported electricity generation from large-scale renewable energy plant. The second component was the Small-scale Renewable Energy Scheme (SRES) which supports renewable energy generated by small generating units (SGUs), such as solar PV or energy displaced by solar water heaters (SWH).

The SRES

Although the SRES is referred to as an uncapped scheme in reality it is subject to an annual target which is based on a Small-scale Technology Percentage (STP). The STP is determined by the Clean Energy Regulator and is applied to the annual sales of electricity to determine the quantity of Small-scale Technology Certificates (STCs) liable parties must surrender to meet their obligations. The STP is determined by a two-step process: 1) forecasting the number of STCs that will be created for the year the STP is to be applied (including any surplus/deficit from the previous year); and 2) dividing this into the Liable Electricity Sales (refer to Figure 2 for the details of the calculation).

To meet their obligations under the RET Liable Parties must surrender the equivalent number of STCs as determined by the STP on a quarterly basis. The quarterly targets are 35% by 28 April, 25% by 28 July, 25% by 28 October and the balance (15%) by 14 February the following year.

STCs that are either in excess or short of the target for the compliance year are carried forward into the following year. This acts as a correction to the STC market on an annual basis and allows for the scheme to be administered by the Regulator without a formal cap. The SRES scheme as such can be described as a "self-correcting target" which ideally rebalances every two years.

For example, in 2011 the STC target was 28 million STCs and the STP 14.8%. By the end of 2011 there was a surplus of 22.5 million STCs; these were added to the 2012 estimate (22.3 million) to achieve a target of 44.8 million for the 2012 year. The 44.8 million equated to an STP of 23.96%.

Clearing House: How it works

The STC Clearing House facilitates the exchange of STCs between buyers and sellers at the fixed price of \$40. It is accessed via the REC Registry and STCs must first be created and validated in the REC Registry, and fulfil all compliance and process requirements.

STCs are queued in the Clearing House and can be purchased by buyers at the Clearing House price (\$40). Sellers STCs are added to the bottom of the STC Clearing House Transfer List and remain there until a buyer submits a purchase request. STCs in the Clearing House are settled on a “first in – first out” basis. STCs lodged in the Clearing House, with the expectation of trading at \$40, must wait until a buyer makes a purchase from the Clearing House. There is no guarantee on how long the STCs will take to sell on this basis.

It is not mandatory for liable parties (electricity retailers and others) to purchase STCs to cover their liability from the Clearing House. They still have the opportunity to seek sellers in the STC market who may be willing to sell their certificates at a lower price (this is also referred to as the secondary market).

Buyers can purchase STCs from the Clearing House even when there are none listed. They will be issued with Regulator-created STCs which can be traded and surrendered exactly like ordinary STCs. Regulator-created STCs are automatically replaced with STCs when STCs are offered for sale in the STC Clearing House.

The Clearing House in effect operates as a seller of last resort and the \$40 payable through the Clearing House becomes in effect a price cap.

STC Market and falling STC Prices

A prolonged surplus of STCs available through the market has meant the Clearing House has not been utilised in any significant way. To date a modest 140,000 STCs have been settled through the Clearing House all of which were transacted before the end of July 2011.

The STC target for 2011 was met (and substantially exceeded) with some ease. The surplus STCs created in 2011 acted to suppress the wholesale market price and the \$40 Clearing House price was never reached (refer to Figure 1). A similar situation has developed through 2012 to date and, despite the carry-forward of the 2011 surplus, a significant STC surplus is expected for the 2012 year¹ (approximately 15 million).

Several factors have conspired to create the oversupply of STCs seen to date. Panel prices and the installed cost of solar PV has fallen dramatically. Reducing installed costs for solar PV together with the solar credits multiplier and persistent premium feed-in tariffs (in some states) has meant the financial returns to install solar systems were quite attractive. This has meant the level of solar PV installations for 2011 and now 2012 significantly exceeded expectations and created an oversupply in the market. The oversupply of STCs has been the primary reason for the relatively low STC price.

At the end of 2011 a total of 50.5 million STCs had been registered to meet the target of 28 million. In 2011 solar PV accounted for 95% of STC registration and SWH the balance.

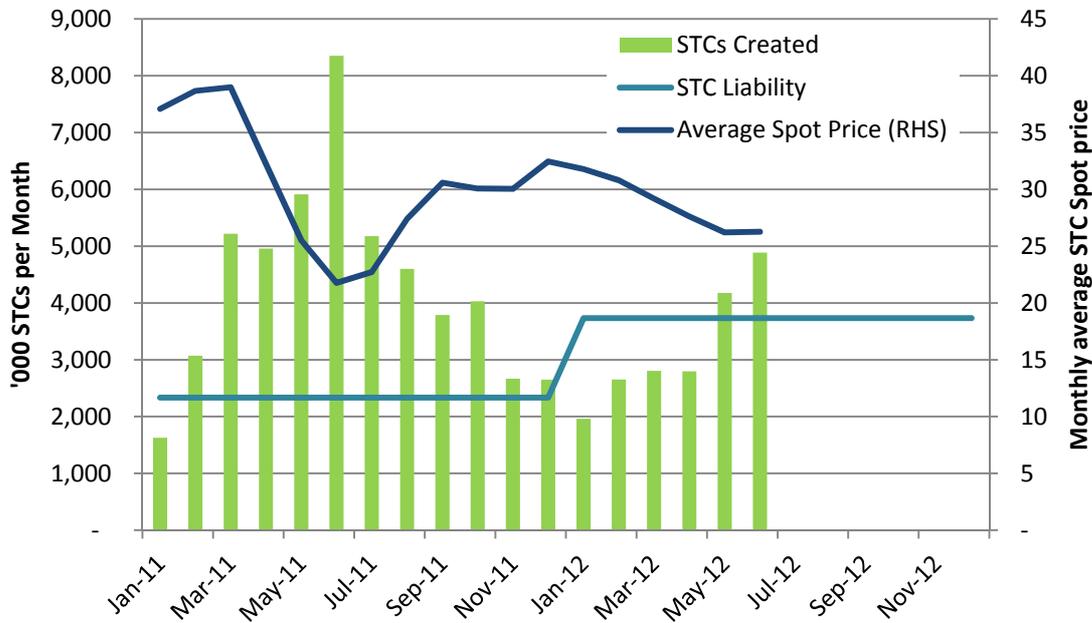
Average monthly prices for STCs progressively fell during 2011 as the number of STCs from solar PV systems increased dramatically. Towards the end of 2011 the number of STCs submitted for creation

¹ Green Energy Markets, July 2012 Solar Report

reduced, as a result the STC price increased. Inversely, the STC price fell as the level of STCs created started to rise in 2012 (refer to Figure 3).

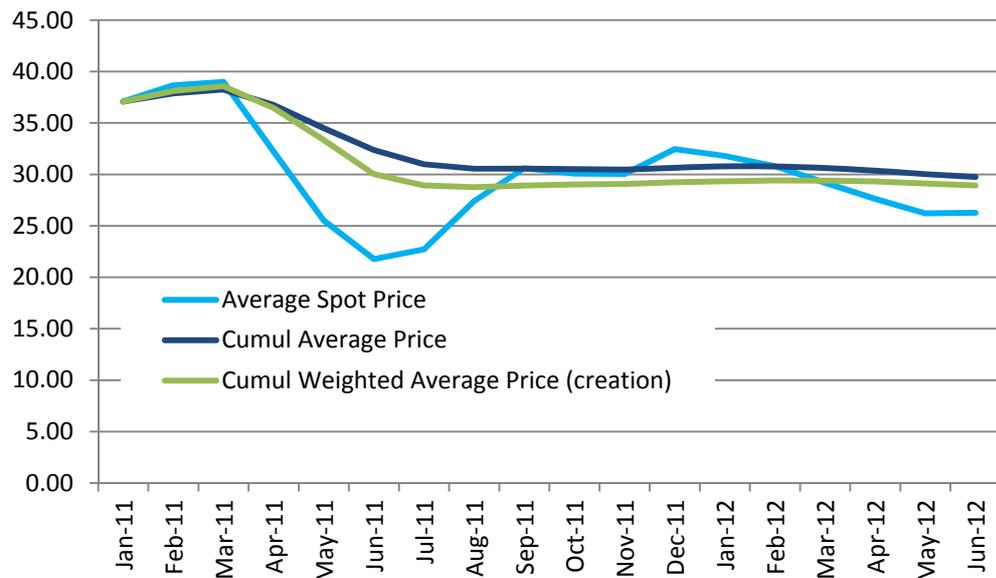
The solar credits multiplier (5 times to 30 June 2011 then reducing to 3 times to 30 June 2012) has significantly contributed to the quantity of STCs created to date. The spot STC price has tended to vary inversely to the level of STCs created. Since the end of June 2012 the price has increased as the level of STCs submitted for creation has reduced.

Figure 1. STCs created to meet the Target²



The average STC price over the 2011 calendar year was \$30.63. If a Liable Party were to have purchased its compliment of STCs on a monthly basis and through the wholesale market (at the spot price) the cost of doing so would be on average \$30.63 per STC (77% of the Clearing House Price). Figure 2 shows the average monthly spot price together with the cumulative average price. The average price for the 6 months to May 2012 was \$28.64.

Figure 2. STC wholesale spot prices



² The STC target has been converted to a monthly target by dividing the annual target by 12.

Environmental brokers NextGen calculate and publish a traded volume weighted STC spot price³.

- For the 2011 calendar year the volume weighted STC spot price was \$30.08;
- For the six months to 30 June 2012 the volume weighted STC spot price was \$28.35; and
- For the 18 month period since the start of the SRES volume weighted STC spot price was \$29.46.

While it is very unlikely that Liable Parties purchase their entire obligation of STCs through the wholesale market and pay the prevailing spot price, the pricing information above strongly indicates that the actual cost of meeting the STC target is well below the \$40 per STC Clearing House price. Based on the above analysis the real cost of the STC scheme is probably closer to \$30 per STC on a cumulative basis.

Cost of the SRES

In estimating the cost of the STC scheme some observers have simply used the \$40 Clearing House price and multiplied this by the STC Target. This overstates the real cost by around 25% as the STC market price is considerably lower than the \$40.

In 2011 the STC scheme cost 0.45 cents per kWh, based on an average STC price of \$30.63 which translates into approximately 1.9% of the average residential retail electricity price (refer to Table 1). The impact of the STC scheme on the average electricity price is forecast to increase to 2.7% for 2012 due to the STC Target being increased to absorb the 2011 oversupply.

Table 1. STC Cost impact

	2011	2012	2013	2014	2015
STP	14.80%	23.96%	18.37%	7.66%	7.37%
Target (000 STCs)	28,000	44,796	34,345	14,319	13,780
Liabile Generation (GWh)	189,189	186,962	186,962	186,962	186,962
STC Prices	30.63	30.00	35.00	37.00	37.00
STC Cost (\$m per annum)	858	1,344	1,202	530	510
STC Cost \$/MWh	4.53	7.19	6.43	2.83	2.73
STC Cost cents/kWh	0.45	0.72	0.64	0.28	0.27
Retail Price (AEMC) Cents/kWh	23.60	26.98	29.97	29.97	29.97
STC cost proportion	1.9%	2.7%	2.1%	0.9%	0.9%

The STC target will reduce in 2013, this is due to the scheduled Solar Credits Multiplier reduction. A smaller STC target will mean the cost impact of the SRES on the average electricity price will fall to 2.1%. The solar credits multiplier will be completely phased out after 2013 and will act to further reduce the impact the STC scheme has on average electricity prices (to less than 1%).

Assumptions used in estimating the cost of the STC Scheme (Figure 3):

- STC Target for 2013 is assumed to be 34.3 million STCs which allows for 15 million surplus STCs carried forward from 2012;
- PV system installations are assumed to be 322,000 for 2012, 230,000 for 2013, 210,000 for 2014 and 200,000 thereafter

³ The spot price is weighted by the volume of reported transactions across the wholesale market

- SWH system installations are assumed to be 80,000 in 2012 and then increasing to 100,000 from 2013 onwards.
- Liabe generation for 2013 is estimated to be the same as that used for 2012 (ie. no growth in electricity consumption);
- STC prices are assumed to recover during the second half of 2012 and into 2013 to average \$30.00 for 2012, \$35.00 for 2013 and \$37.00 for 2014 and 2015.
- Estimated retail electricity prices have been sourced from the Australian Energy Market Commission (AEMC) report 'Possible Future Retail Electricity Price Movements; 1 July 2011 to 30 June 2014' released in November 2011.

Contribution to reducing power consumption and reducing wholesale electricity prices

The cost of the SRES scheme is mitigated by the downwards pressure it indirectly applies on wholesale electricity prices. As of 2011 the SRES had supported a significant 2,400 GWh reduction (1.2%) in power consumption across National Electricity Market (NEM)⁴. The reduction in consumption has been accompanied by a reduction in wholesale electricity prices. This is because generators who supply their electricity to the wholesale market are competing to supply a lower demand. According to the Green Energy Markets report wholesale power prices have been at their lowest levels in real terms for more than 10 years. This is a reduction of around \$20 per MWh or 2 cents per kWh.

The contribution the SRES will make to reducing power consumption is expected to more than double by 2015 (more than 5,300 GWh). This will continue to put downwards pressure on wholesale electricity prices while at the same time the operational costs of the SRES will continue to fall.

⁴ Green Energy Markets – Impact of market based measures on NEM power consumption, June 2012

Attachment 1

Small-scale Renewable Energy Scheme (SRES)

The SRES has been designed to deliver households, small business and community groups, up to \$40 for each small-scale technology certificates (STCs) created by small-scale technologies like solar panels and solar water heaters.

The Renewable Energy Regulator has established a voluntary 'clearing house' as a central point for the transfer of STCs at \$40. There will be no cap on the number of STCs that can be created. In most cases, householders will continue to get the value of STCs immediately, as an agreed upfront discount on the cost of installing their solar water heater or solar PV system, as they do under the current arrangements.

In order to ensure the \$40 clearing house price in the SRES remains relevant over time, the legislation establishes a process to review the price, if necessary. Before making any determination to reduce the \$40 price, the Minister must obtain and take into consideration independent advice on a number of issues, including: changes in the costs of solar PV and solar water heaters; the extent to which owners of solar PV and solar water heaters contribute to the upfront costs of those systems; and the impact of the clearing house price and the levels of installation of solar PV and solar water heaters on the electricity market, including on electricity prices.

To facilitate the smooth operation of the small-scale market, the legislation also stages the flow of STCs. The regulations establish an estimate each year for the number of STCs needed to be acquired by liable entities. The target is set to align with expected rates of STC creation based on historic rates, analysis of government support, and expert judgement. Based on this target, liable entities are required to surrender STCs four times a year.

<http://www.climatechange.gov.au/government/initiatives/renewable-target/fs-enhanced-ret.aspx>