APVA Response to ESCoSA's "2011 Determination of Solar Feed-in Tariff Premium, Draft Price Determination"

December 2011

ESCoSA has been asked to determine the Feed in Tariff Premium to apply to PV generated electricity from January 2012 to June 2014. ESCoSA's Report "2011 Determination of Solar Feed-in Tariff Premium, Draft Price Determination",[1] sets out the reasons for its draft price determination, which is summarised in the Table below:

Draft Price Determination for the Feed-in Tariff Premium to apply in SA from January 2012 to June 2014 (nominal c/kWh)

	2011-12	2012-13		2013-14	
	Both Scenarios	Carbon Scenario	No Carbon Scenario	Carbon Scenario	No Carbon Scenario
Reduced Wholesale Electricity Cost	6.4	8.9	8.1	10.2	9.0
Avoided Losses	0.6	0.8	0.7	0.9	0.8
Market and ancillary service fees	0.1	0.1	0.1	0.1	0.1
TOTAL	**7.1**	**9.8**	**9.0**	**11.2**	**9.9**

In the following we restrict our comments to the scope of ESCoSA's review, and the treatment of indirect impacts, and then highlight lesser issues.

The Market for Distributed Energy

Of overriding concern to the APVA is the failure of the report to acknowledge the changing environment in which retailers will need to operate as the uptake of distributed energy – both supply and demand - increases. The APVA is of the view that the current regulations do not adequately cater for the significant changes now under way in the distributed energy market generally and that these cannot be separated from responses to PV in particular.

[1] 2011 Determination of Solar Feed-in Tariff Premium, Draft Price Determination", Essential Services Commission of South Australia, SA Government, 2011.

With the levelised cost of PV electricity now at or below retail electricity costs in many areas, and continuing to decrease, an increasing number of households and businesses will install PV, with or without any government subsidies. This will decrease customer electricity demand, adding to decreases already evident as a result of increased solar water heater and PV uptake as well as energy efficiency[2]. The current retail market depends on kWh sales and a daily service availability charge. Network operators also depend on kWh sales and network access charges. If kWh sales continue to fall, one response to maintain retailer and network operator revenue may be to increase service availability and network access charges. Customers are unlikely to respond well to continued increases in electricity bills as their usage is reduced. For these reasons, the APVA believes that new regulatory arrangements will need to be put into place as soon as possible to cater for a new market in distributed energy services, rather than just electricity sales. Such a market would facilitate new business models for both networks operators and retailers, providing appropriate incentives for grid support functions, for distributed generation and demand reduction. We note also that PV inverters have significant capability to assist networks, yet many of these capabilities are either prevented or not provided with any incentives at present.

Another area of concern is the focus on costs and consequences of installing PV specifically, given that the NEM has explicit formal objectives of technology and participant neutrality. We note, for instance, the significant costs incurred by recent rapid uptake of air conditioners and that there has been no discussion about those costs being borne by the owners of such systems – which are of course subsidized by households that do not own them.

Indirect benefits

ESCoSA states that "Sources of value to a retailer must be measurable and ascribed to PV generation". This approach dismisses any potential indirect benefits, such as the merit order effect and reduced loss factors that, as discussed below, could have significant value. Although ESCoSA acknowledged that PV systems provide both of these benefits, a decision was made to exclude them when calculating the value provided by PV electricity.

The merit order effect was excluded because it was considered to be too difficult (and costly) to calculate and allocate to PV customers with any certainty, and because the benefit is not captured by the retailer servicing the owner of the PV system, but rather by all retailers who then pass it on to their customers. Similarly, reduction in loss factors was excluded because the benefit is already passed on to all customers.

However, as discussed below, these indirect benefits are not difficult to *estimate*, and it is precisely because such benefits are not captured by those that provide them (ie. they are externalities), that government intervention is required to capture and allocate them fairly. It is worth noting that assigning these benefits to PV system owners would not increase costs for non-PV customers above what they would otherwise be, it would just mean that the reduction that would otherwise occur would go to those responsible for it.

[2] AusGrid has reported an annual decrease of 2% for the last 4 years

It is possible that these indirect benefits, when combined with the direct benefits identified by ESCoSA, could have a value greater than the current retail tariff. This would justify net metering and mean that the indirect benefits do not need to be accurately measured, only estimated. This has in fact been done for the merit order effect using actual price dispatch stacks from the NEM in 2009 and 2010 (where PV output drops the dispatch price down the dispatch order).[3] For 1GW of PV (which is slightly less than currently installed in Australia), the reduction in average spot price for 2009 and 2010 was 0.9c/kWh. When this was assigned to PV generation, it equalled approximately 17c/kWh of value. While the authors acknowledge their approach is not perfect (for example it does not allow for possible changes in participant bidding behaviour in response to PV), the size of the benefit makes it worthy of further investigation. Similarly, both Marginal Loss Factors and Distribution Loss Factors are revised annually following established procedures. The impact of PV systems on such loss factors could readily be calculated in aggregate and applied as an average benefit to owners of PV systems.

Other issues

Hedging

ESCoSA quotes ACIL Tasman's report "The fair and reasonable value of exported PV output",[4] as follows:

"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" (p36 of ESCoSA report).

However, what they omitted to say was that ACIL Tasman also stated:

"In reaching that conclusion we assumed that contract positions would remain fixed. If retailers adjust their contractual positions because they receive increased exported PV output from their customers, they would also change their contracting and risk management costs" (p30 ACIL Tasman report).

In other words, to the extent that PV (or other measures that reduce energy use, such as energy efficiency measures and SWHs etc) reduce electricity sales over time, the contracting and risk management costs would also reduce. Likewise, increased electricity sales would increase hedging costs over time. Thus, reduced hedging costs should in fact be included in the value provided by PV electricity.

[3] McConnell1, D., Hearps, P., Eales, D., Dunn, R. and Bateman, L. (2011) "Retrospective modeling of the merit-order effect on wholesale electricity prices from distributed photovoltaic generation in the Australian National Electricity Market", Melbourne Energy Institute, The University of Melbourne, Sept 2011.

[4] "The fair and reasonable value of exported PV output", a report prepared for the Essential Services Commission of South Australia by ACIL Tasman, October 2011.

Network impacts

ESCoSA states that:

the electricity retail tariff is made up of four components: *transmission charges, distribution charges, wholesale electricity costs and retailer costs* (page 17).

This is followed by the statement that "As the legislation requires the Commission to consider the fair and reasonable value of solar PV exports to retailers, any impact on transmission charges and distribution charges is not relevant" (page 17). This is quite a remarkable conclusion. If the wholesale component is to be included, then it follows that the transmission and distribution components should also be included.

In the next chapter, ESCoSA states that:

"Retail electricity prices are made up of three components: wholesale electricity costs; retail operating costs and retail margin",

hence avoiding any discussion of distributed generation's ability to impact on either transmission or distribution network costs for retailers.

As stated at the beginning of our submission, PV, as well as energy efficiency measures and SWHs that reduce electricity demand, will have a significant impact on the revenue available to retailers and network operators to pay for networks over coming years. Distributed generation of all types can also have significant impacts (both positive and negative) on the operation and costs of networks.

While we agree that quantification of these impacts may be difficult, the fact that distributed generation can impact on networks and that network costs are passed onto retailers (and then customers), means that in a review such as this, they should not be excluded. For example, semi-scheduled & non-scheduled renewable generation are already incorporated into the annual load forecasts underpinning Transgrid's Electricity Statement of Opportunities (ESOOs) for NSW. Although it is unclear how PV is incorporated, Table 4.4 of Transgrid's Annual Planning Report 2011 indicates that 358MW of 752MW (about 50%) of non-scheduled generation is assumed to be available during peak demand times (hydro is assumed to have 20% availability and wind is assumed to have 5% availability). This assumed available capacity reduces the required network expenditure in the coming years. Indeed, Essential Energy has been able to calculate this as an average benefit and have been paying it to PV customers for a number of years.

Attachment A: Background on the APVA

The APVA is an association of companies, government agencies, individuals, universities and research institutions with an interest in solar photovoltaic electricity. In addition to Australian activities, we provide the structure through which Australia participates in an International Energy Agency (IEA) programme called PVPS (Photovoltaic Power Systems), which in turn is made up of a number of activities concerning PV performance and implementation. Further information is available from www.apva.org.au.

APVA Objective

The objective of the Australian PV Association is to encourage participation of Australian organisations in PV technology and industry development, policy analysis, standards and accreditation, advocacy and collaborative research and development projects concerning photovoltaic solar electricity.

APVA membership provides:

Information

- Up to date information on new PV developments around the world (research, product development, policy, marketing strategies) as well as issues arising
- Access to PV sites and PV data from around the world
- International experiences with strategies, standards, technologies and policies
- Australian PV data and information
- Standards impacting on PV applications

Networking

- Access to international PV networks (PV industry, government, researchers) which allow personal relationships to develop and can be invaluable in business, research or policy development or information exchange generally
- Opportunity to participate in international projects, with associated shared knowledge and understanding
- Opportunity to meet regularly and discuss specific issues which are of international, as well as local interest. This provides opportunities for joint work, reduces duplication of effort and keeps everyone up to date on current issues.

Marketing Australian Products and Expertise

- Opportunities for Australian input (and hence influence on) PV guidelines and standards development. This ensures both that Australian products are not excluded from international markets and that Australian product developers are aware of likely international guidelines.
- Using the information and networks detailed above to promote Australian products and expertise.
- Working with international network partners to further develop products and services.
- Using the network to enter into new markets and open new business opportunities in Australia.

The International Energy Agency PV Power Systems Programme (IEA PVPS)

One principal activity of the APVA is to manage Australian participation in the PVPS Programme. This work is arranged by Tasks, each with its own commitments of time and resources. Support is provided by the Australian Solar Institute. At present Australia participates in:

Task 1: PV Information Exchange and Dissemination

Task 11: PV Hybrid Systems within Mini-grids

Task 14: High Penetration of PV in (Smart) Electricity Grids

and maintains an interest in:

Task 8: Very Large-Scale PV Systems

Task 9: PV in Developing Regions

Task 12: Environmental Health & Safety for PV Systems

Task 13: PV System Performance

For further information on the Australian PV Association visit: **www.apva.org.au**

For further information on the IEA PVPS Programme visit **www.iea-pvps.org.**