Australian

PV Association

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Response to Media Reports Regarding Photovoltaics
Australian PV Association

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Below are listed the claims that have recently been made in the media, followed by the Australian Photovoltaics Association's (APVA's) considered responses.

Claims

1. PV will result in large increases to power bills
2. PV is a very expensive way to reduce emissions
3. PV is inequitable in that "Bankstown users pay for Point Piper users" and supporting PV is just "middle class welfare" and supporting PV through gross FiTs is "likely to prove grossly inequitable".

Claim 1: PV will result in large increases to power bills

APVA Response:

NSW was the main focus of this claim because of the NSW Government's Solar Bonus Scheme which provides a gross feed-in tariff (FiT) for PV systems up to 10 kW.

The price of grid electricity sold to consumers is set by the NSW Government through its "Review of regulated retail tariffs and charges for electricity", the most recent one being for 2010 to 2013. The associated report states that more than 90% of the price increases are due to network costs and the potential introduction of the CPRS. Of the remaining 10%, less than 5% is due to increases in the retailers' margins, as well as increases in their retail costs (which are in part due to the NSW FiT) (NSWGov, 2010). Thus, depending on the increases to the retailer's margins, the NSW FiT would account for only a few percent of the increase to electricity costs.

According to the NSW Government, each 50MW of PV installed under their current gross FiT program (a 60c gross FiT over 7 years), will add $7.47 to an average household's annual electricity bill – or just over 14c per week (NSWGov, 2009).[1] These are consistent with the APVA's own calculations of just over 16c per week. Even if the final amount

[1] Note that one of the media articles incorrectly stated that the NSW Government's review of their FiT had occurred because 500MW of PV had been installed in NSW, when it was actually triggered when 50MW had been installed.

installed is 5 times this, or 300MW, households would be paying less than one dollar a week more in their electricity tariffs, about the equivalent of a cup of coffee a month.

Although the NSW FiT appears generous compared to tariffs offered in other States, it is only available over a time period of 7 years – meaning that if a system is installed 3 years into the scheme, it will only receive 4 year's worth of the FiT.[2] Assuming that a system is installed in the first year of the scheme and receives the full 7 years of the FiT[3], after which it receives the standard electricity retail tariff, then over a 20 year system life, the effective rate paid for PV electricity is only about 43c/kWh, whereas the average electricity price over the same period is anticipated to be about 31c/kWh.[4]

At least one media article compared the cost of PV electricity to the wholesale cost of electricity, but this is misleading because:

1. PV produces electricity at the times of peak prices in the wholesale market, which can be considerably more than the average, and can reach as high as $12,500/MWh (this limit is referred to as the Market Price Cap).
2. PV is a form of distributed generation and so is in fact competing in the retail market and so should be compared to retail, not wholesale prices. This is discussed in more detail below.

Claim 2: PV is a very expensive way to reduce emissions

APVA Response:

The cost of abatement driven by PV shouldn't be compared only to the CPRS abatement costs because PV is doing more than just reducing emissions: it is also producing electricity.[5] Thus, the abatement cost of PV is equal to the difference between the price of the retail electricity it displaces and the price of the FiT.

Based on current electricity prices and current FiTs, this would indeed mean a relatively high abatement cost, but as discussed below, this will not continue to be the case for much longer. The cost of PV has been reducing at a consistent rate of 22% for each doubling of capacity. With high market uptake rates, the cost of PV has declined rapidly in the last few years and is expected to continue to do so.[6] Two years ago the average system cost in

[2] This approach, which is fully supported by the APVA, is to account for the prices of PV systems reducing significantly over time which, as discussed below, is likely. It also provides a clear and tapered exit strategy for the Government.

[3] Very few systems will actually receive the full 7 years, since few had the correct meters installed at day 1 of the 7 years.

[4] This assumes increases in retail electricity costs according to current NSW Retail Price Determinations and a 3.5% per annum increase thereafter – as discussed below.

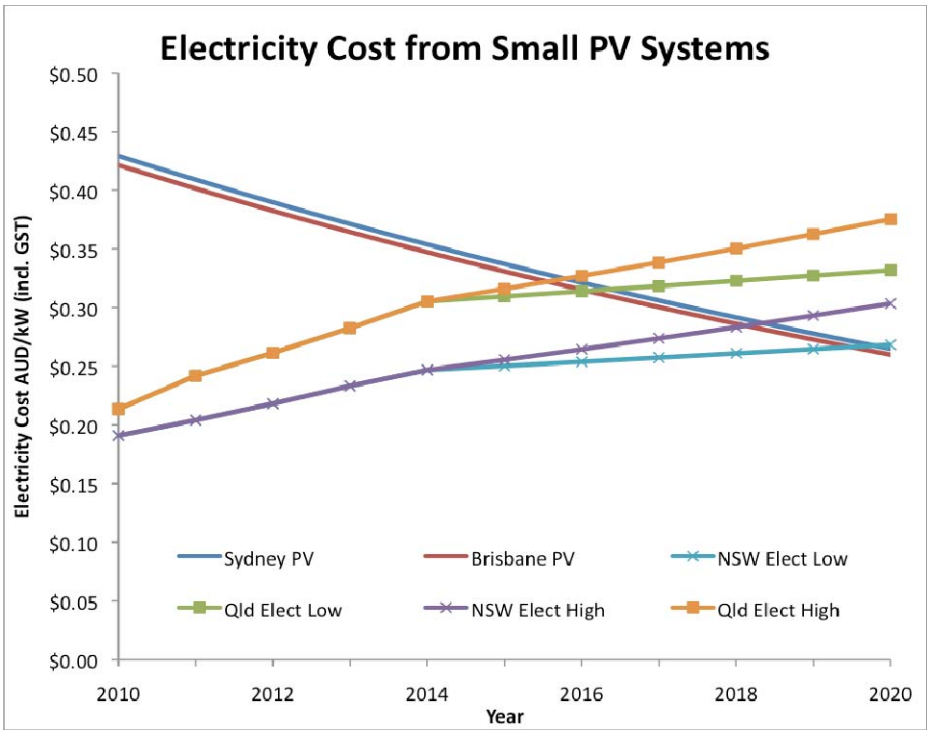
[5] It is worth noting that renewable energy reduces emissions in Australia and so the associated investment and job creation occurs in Australia. The CPRS in contrast, allowed unlimited use of international abatement credits, in which case the associated investment and job creation would have occurred outside Australia.

[6] Which is why, in its recent submission to the NSW FiT review, the APVA recommended a reduction in the FiT, with further automatic reductions as more systems are installed.

Australia was about $12,000/kW (without rebates), whereas in 2010 systems can be bought for as low as $6,000/kW (again without rebates). This drop has occurred due to a combination of reduced PV module costs and innovative PV business models. Continued high growth in PV uptake rates internationally and a range of new products and technologies coming onto the market are expected to see average module prices dropping from around $2/W in 2010 to US$1.50 by 2013, with several manufacturers already producing at less than $1/W (Photon Consulting, 2010).

As discussed above, price determinations already made will see electricity prices increasing over the next three years and most likely continue to do so after that time. The combination of PV price reduction and grid electricity price increases mean that PV electricity is likely to be the same price as retail electricity within the next 5 to 10 years - this is known as grid parity. At this point, the abatement cost for the owner of the PV system is zero. After this point, the abatement cost is negative. It is for this reason that Governments around the world are providing support to grow the PV market.

The figure below shows one possible outcome of projected cost reductions on Australian PV electricity prices. It also shows projections for residential electricity tariffs in Sydney and Brisbane out to 2020, based on recent Price Determinations in NSW and Qld, then growth rates of 1.5% (low) and 3.5% (high) per annum. All prices are in real values, meaning they would be higher if inflation was included.[7] The projections show grid parity being reached in Brisbane by 2016 and Sydney by 2018-19.



[7] This chart was produced using a model produced by the APVA for the Australian Solar Institute.

While such projections are indicative only, it seems likely that price parity will be reached in various areas of Australia before 2020. Note that parity occurs at or after the time that the Renewable Energy Target Solar Credits are expected to be discontinued, and schemes such as the NSW gross FiT will have expired.

This parity timeline is consistent with international reports, such as the NREL report 'Break-Even Cost for Residential Photovoltaics in the United States: Key Drivers and Sensitivities', which showed that grid parity could be reached in many parts of the United States by 2015, although there was significant variation between regions due to differences in electricity prices, solar insolation levels and financing options (NREL, 2009). In Australia, Lend Lease Solar has stated it believes grid parity will be reached around 2014.[8]

While the exact timing of these projections can be debated, their real value is in identifying the need to deal with a sudden increase in interest by the general public as PV grid parity is approached and passed. There are two significant outcomes of this that each justify the need for support of PV in the short term.

(i) Maintenance of safety standards and quality control

With increased interest in PV, there will be increased need for suitably trained installers and accreditors. In order to avoid possible reductions in standards and quality control, there is a need for a gradual and controlled build up of industry capability, rather than a sudden rush. With the insulation rebate, a rapid and significant expansion of the insulation industry saw a reduction in standards that had extremely serious consequences. FiTs and other support for PV are allowing the industry to develop standards and to train installers prior to grid parity being reached.

(ii) Maximising benefits to electricity networks

Large numbers of PV systems on distribution networks may have impacts – both positive and negative. These will need to be managed. Rather than waiting until grid parity is reached, then having a very rapid uptake, it is preferable to have gradually increased penetration so that all impacts can be assessed and measures taken to minimise any negative impacts and maximise the positive ones.

One way to maximise the positive outcomes would be to increase PV uptake by commercial businesses, and so better match PV output to load[9]. Commercial-scale systems can also be much cheaper per kW installed. Residential users could still participate in the construction of commercial-scale systems through community ownership of such systems – such as those placed for example on a local shopping centre. This type of deployment model would also allow ownership by individuals who currently have limited solar access, for example those who live in apartments.

[8] http://www.businessspectator.com.au/bs.nsf/Article/A-new-lease-on-life-for-solar-pd20100806-82SHT?opendocument&src=rss

[9] PV output peaks during the middle of the day, as does commercial load, while residential load typically peaks in the late afternoon to early evening.

Claim 3: PV is inequitable, especially when supported by a gross FiT

APVA Response:

In 2009, a survey of NSW recipients of the Solar Homes and Communities Program rebate (SHCP, which was previously the PVRP) was carried out for the Commonwealth government (DEWHA, 2009). It showed that, before the means test was introduced, more households with an income less than $70,000 received the rebate than did households with an income greater than $70,000.[10] As PV system prices continue to decrease, they will become even more affordable for people on low incomes.

Gross FiTs are more equitable than net FiTs. This is because, with a net FiT, households receive the FiT only on what they export. For households that can only afford a small system, this will only be a relatively small proportion of what the PV system produces. In contrast, households that can afford a large system will receive the FiT on a much greater proportion of what their system produces. Thus, with a net FiT, wealthier households will receive a disproportionately greater income from the FiT than less wealthy households.

Of course on a gross FiT, wealthier households that can afford a larger system will receive more FiT income, but their system will also cost more, especially since the Renewable Energy Target Solar Credits multiplier only applies to the first 1.5kW.

Gross FiTs are also more equitable on the basis of the values that the PV system provides, be they offsetting conventional generation, reducing line losses or deferring network augmentation. Whether the PV electricity is used by the household of the system owner, or is exported and used by their neighbour, its contribution to these values is identical. A PV system's value in terms of reduction of greenhouse emissions is also identical regardless of who uses the electricity it produces.

Gross FiTs are also much easier for government's to administer because the amount of FiT income is only dependent on the amount of electricity produced by the system, which is relatively easy to estimate beforehand, whereas for a net FiT, the amount of FiT income is dependent on the difference between PV output and the household load at any one instant and very difficult to estimate 20 years into the future.

Other Values of PV

Governments around the world are supporting the development of PV technologies and markets because PV is a versatile, clean, silent and reliable energy technology which can be deployed at any scale from milliwatts to Gigawatts, in stand-alone or grid-connected applications, on buildings, appliances or on their own. The industry is already worth more than $50 Billion a year and is providing thousands of new jobs in factories and onsite, in cities and in rural areas.

[10] Of the households with incomes less than $70,000, incomes were evenly distributed across income bands with 17% being less than $30,000, 19% between $30,000 and $49,999, and 17% between $50,000 and $69,999. The households with incomes greater than $70,000, were split into only two bands - $70,00 to $100,000 and greater than $100,000, with 22% and 24% respectively.

PV systems will still be generating clean electricity in Australia for 20 to 30 years after the Australian FiTs cease. In the continued absence of an emissions trading scheme or other form of price on carbon, PV is not only reducing Australia's emissions already, but will continue to do so for many years to come.

References

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