

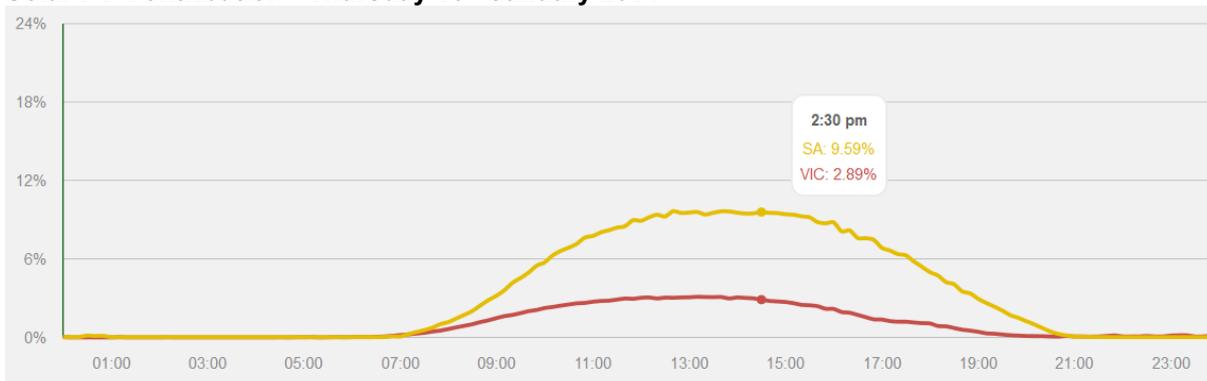
Solar PV making a significant contribution

Victoria and South Australia have just gone through a week of very high temperatures and very high maximum electricity demand. There has been some debate as to what contribution if any solar PV has made. Our analysis shows that solar PV has made a significant contribution being responsible for reducing peak demand by 4.6 per cent.

According to electricity demand data published by the Australian Energy Market Operator (AEMO) the peak electricity demand occurred on Thursday 16th January during the half hour commencing 4.00 pm in Victoria (10,240 MW) and during the half hour commencing 6.30 pm in South Australia (3,246 MW). South Australia and Victoria are interconnected so to properly assess the contribution of solar PV we have considered electricity demand and PV contribution across both states.

The generation of electricity from solar at more than 350,000 homes and businesses in South Australia and Victoria is not visible to the electricity system and masks the level and timing of peak demand. Solar PV is seen by the electricity market as a reduction in electricity use. As a result, AEMO's data excludes it which has historically made it difficult to determine its contribution. The Australian PV Institute (APVI) publishes PV generation based on the actual output of 1700 systems across Australia and then applies this to the total number of systems that are installed (refer to <http://pv-map.apvi.org.au>). The output of solar PV systems tends to be highest around the middle of the day and starts to decline after 3.00 pm. Solar PV's share of demand on Thursday 16th January is summarised in the following chart.

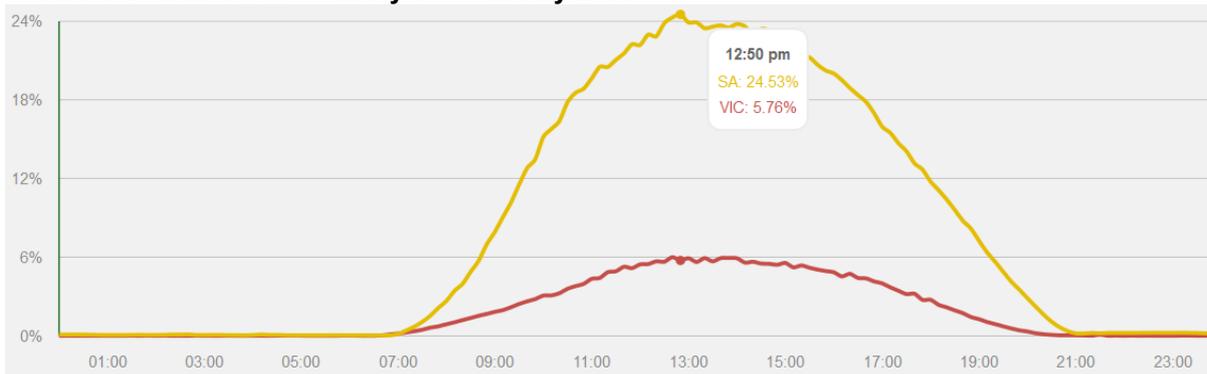
Solar PV Contribution - Thursday 16th January 2014



Source: APVI

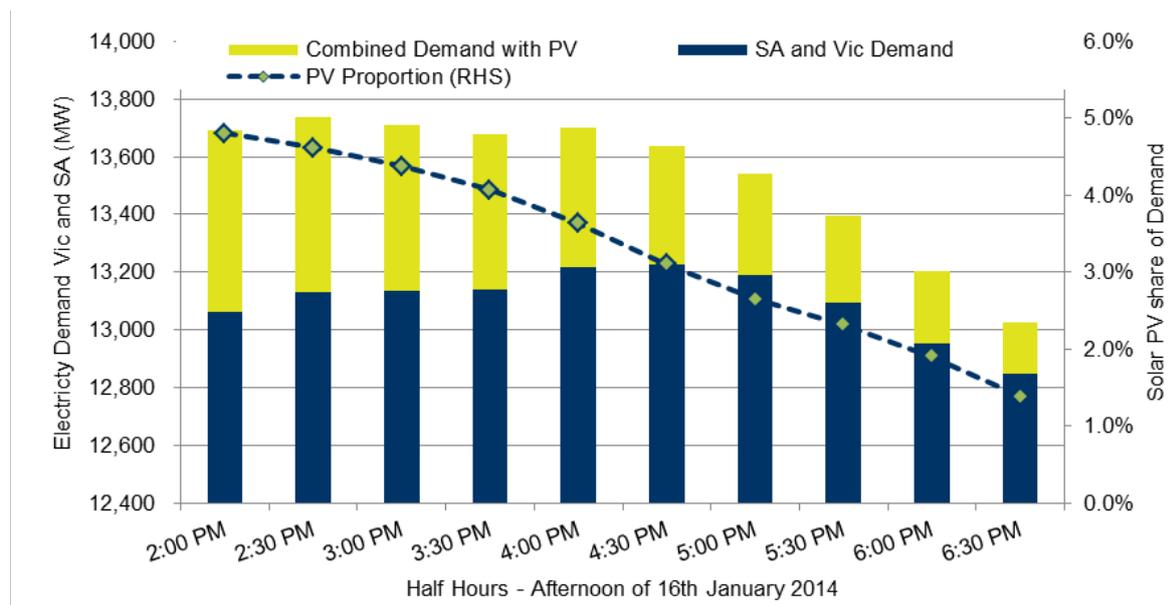
During the peak afternoon period residential solar PV was generating more than 9 per cent of South Australia's electricity demand and nearly 3 per cent of Victoria's demand. At other times, of lower demand, such as last Sunday (19th January) solar PV was producing nearly 25% of South Australia's afternoon electricity demand and 6 per cent of Victoria's.

Solar PV Contribution - Sunday 19th January 2014



When we consider South Australia and Victoria as a combined region the combined maximum demand amounts to 13,225 MW which occurred during the half hour beginning 4.30 pm. At this time solar PV was generating a combined 410 MW across South Australia and Victoria. The total real demand is a combination of the two and becomes 13,735 MW.

If we add back the estimated generation from PV to the actual demand figures provided by AEMO we find that the real combined peak demand becomes 13,736 MW and includes local PV production of 606 MW. The following chart shows that the real peak demand has occurred during the half hour commencing 2.30 pm. This is several hours earlier than the AEMO data would suggest. At this point solar generation from PV accounted for 4.6 per cent of demand.



For Victoria, the real peak demand reached 10,465 MW, which is slightly higher than the level reached back in the lead up to Black Saturday in January 2009.

Solar PV's contribution has been a lot more than just reducing peak demand by 4.6%. Its operation has meant that much higher cost generators have not had to be dispatched. As a result the wholesale power price has not risen anywhere near as high as other times when we have reached very high levels of demand. As a comparison Victoria's previous peak demand of 10,415 MW occurred on Thursday, 29 January 2009 in the half hour period commencing 12.30 pm. The average wholesale market price during the afternoon (12.00 pm to 6.00pm) was \$4,619/MWh.

The average wholesale price for last Thursday afternoon in Victoria was a more moderate \$509/MWh. While there will be a number of factors that contribute to lower prices, such as new generation coming on line, 606MW of additional generation from solar will have had a significant impact.

Further during the hot spell a number of customers lost electricity due to local distribution assets coming under pressure due to the greater demand.

Without the contribution of solar PV, many more assets would have come under pressure and more customers will have been disconnected.

Ric Brazzale
 President of the REC Agents Association
 Managing Director, Green Energy Trading
 20 January 2014