

IEA PVPS Annual Report Australia 2019

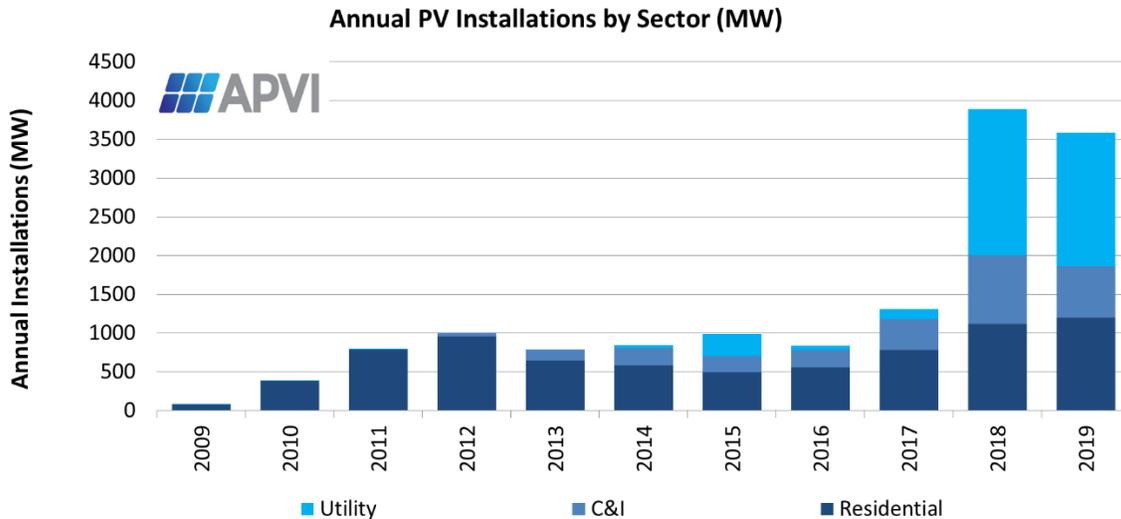


Fig 1 Historic trends in annual PV installations in Australia by sector

General Framework and Implementation

Australia has remained in the top ten PV markets in the world for over ten years, and 2019 looks like it will come close to matching the 2018 record year for capacity additions. Final numbers are not yet in, but projections are for a total 3.6GW commissioned in 2019, with record capacity additions driven by continued strong growth in utility scale solar, with over 1.6GW added in that sector alone over the calendar year. Residential solar and commercial and industrial markets remain strong – providing a combined total for rooftop solar of close to 2GW.

Over 2.2 million Australian homes and businesses now have a rooftop PV system – over 220 000 of which were added in 2019. Residential penetration levels are now at 25% of free-standing homes and reach over 70% in some urban areas. Over 650MW of commercial and industrial PV was added in 2019, with many shopping centre owners rolling out MW-scale solar across their entire portfolio (data from <https://pv-map.apvi.org.au/>)

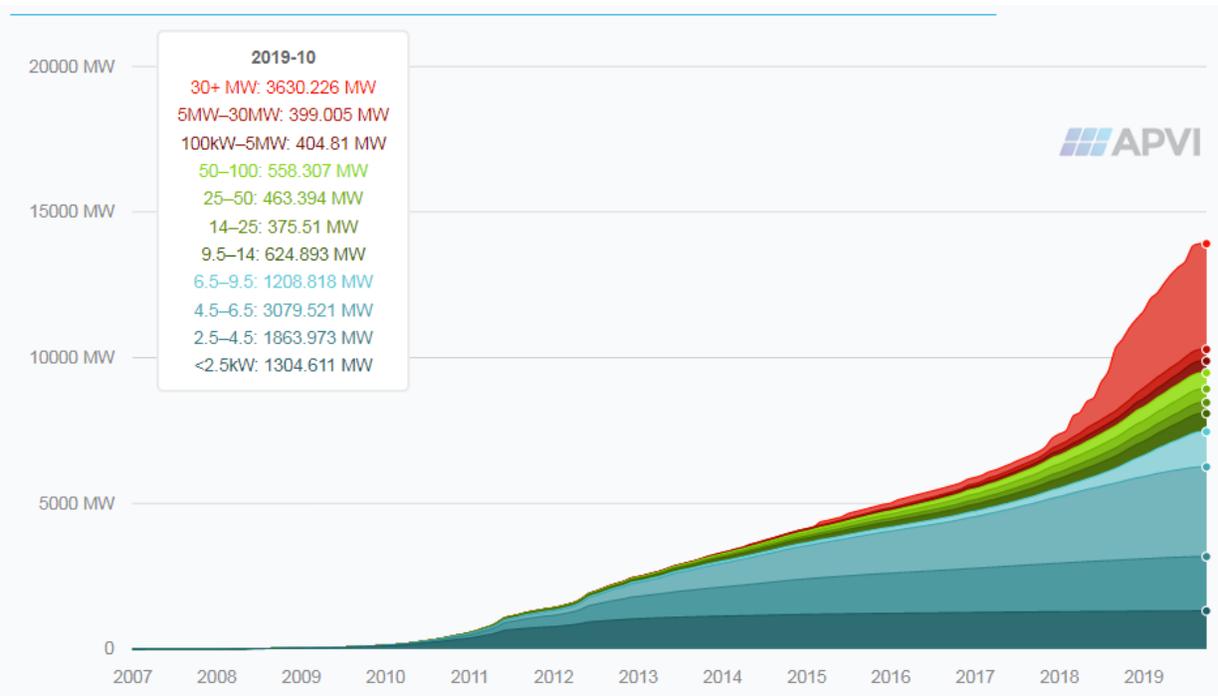


Figure 2. Cumulative installed capacity by system size to October 2019

Deployment has been driven by high electricity prices, a continued reduction in PV system prices, an increasing awareness of the benefits of PV to businesses, large corporate PPA market, plus solar farm deployments to meet the final targets of the long-running Renewable Energy Target (RET) and various State and Territory government schemes.

With the closing of the RET scheme in 2020, Federal Government support for solar installations over 100kW ends in 2020. Smaller installations, up to 100kW will continue to be supported through to 2030, with the level of support declining each year. Some additional State based incentives exist for utility, business and particularly household solar and batteries.

Energy policy is the subject of much discussion, yielding little in the way of national direction since late 2013. . Forward thinking policies continue to be reshaped, de-scoped and discarded, leaving the energy industry with insufficient certainty to make long-term decisions. Technical and market hurdles erode investor confidence further, with large scale connection requiring in some cases the addition of synchronous condensers to contribute to system strength, and some existing plant being constrained in its output due to stability issues, network congestion, or in response to periods of negative pricing in the wholesale market. Negative pricing events are now regular occurrences, with some coal-fired plant offering at -\$1000/MWh to remain dispatched in during peak solar (and wind) periods. In these periods, a growing number of the solar plants have power purchase contracts that specify they curtail. Another issue is the NEM's use of Marginal Loss Factors (MLF) to reflect average losses (and increasingly curtailment) associated with additional load and generation in different parts of the network. The addition of large solar plants can markedly change these MLFs which then impact on the price received by these plants. The MLF is recalculated every year and presents a risk to existing investment as new generation is added in particular parts of the network, and loads change.

The Australian rooftop solar market is widely expected to remain stable in 2020, with enthusiasm for solar remaining from households and businesses becoming increasingly aware of the competitiveness and benefits of investment. For large scale solar, there is a project pipeline for a

further 2.4GW of utility scale solar projects with a decline in forward commitments beyond that due to policy and market uncertainty and the associated risks around connection costs and performance requirements.

National Programme

With solar increasingly competitive in Australia, National Programmes are drawing to a close. The Large Scale RET target of 33,000 GWh of renewable electricity annually over 2020-30 has now been met by existing renewables plant and won't drive additional renewable capacity over the coming decade. Support for small-scale systems (up to 100kWp) will, unless changed, continue through to end 2030, with an uncapped Small-scale Renewable Energy Scheme (SRES) that are able to claim certificates (STCs) up-front for the amount of generation they will be deemed to produce until the end of 2030. This means that the STCs for small systems act as an up-front capital cost reduction.

Deployment of large scale solar receives ongoing support from by the Clean Energy Finance Corporation (CEFC), a statutory authority established by the Australian Government, that works to increase the flow of finance into the clean energy sector by investing to lead the market, to build investor confidence and to accelerate solutions to difficult problems. CEFC investments in new generation in 2018-19 declined compared to earlier years, reflecting broader market conditions, including grid and transmission constraints and the build out of the Renewable Energy Target. New CEFC commitments in 2018-19 included \$AUD 190 million in projects targeting energy generation from solar, delivering a portfolio with \$AUD 1.1B invested in over 1.6GW in their solar portfolio (CEFC Annual Report, 2019).

Additionally, the Australian Renewable Energy Agency (ARENA) was established by the Australian Government to improve the competitiveness of renewable energy technologies and increase the supply of renewable energy in Australia. ARENA holds a portfolio of \$AUD 654 million solar projects (ARENA Annual Report, 2019).

Research, Development & Demonstration

PV research, development and demonstration are supported at the national, as well as the State and Territory level. In 2019, research was funded by the Australian Research Council, Co-operative Research Centres and ARENA.

ARENA is the largest funder of photovoltaics research in Australia. In 2018-19, ARENA committed \$AUD 2m for accelerating solar PV innovation and, significantly, a further \$38 million to extend the Australian Centre for Advanced Photovoltaics to continue world-leading research in solar PV R&D (ARENA Annual Report, 2019).

Industry and Market Development

2019 saw a stabilisation of the PV market, after significant growth in 2019. Average system sizes in the sub-100kW market grew further to 7.3kW/system, reflecting both the growth in commercial installations, and growth in the typical size of residential systems as householders prepare their homes for future addition of batteries and electric vehicles.

Average residential solar PV system prices continued to decline in 2019, to AUD1.12 per Watt including STCs, or AUD1.65/Watt without STC support (<https://www.solarchoice.net.au/blog/solar-power-system-prices>).

The Australian storage market remained strong in 2019, but data on total installs remains inaccurate. Estimates are that a further 20,000 batteries were installed in 2019, matching 2018 numbers. The Australian storage market remains favourably viewed by overseas battery/inverter manufacturers due to its high electricity prices, low feed-in tariffs, excellent solar resource, and large uptake of residential PV.

2020 is expected to see stability in rooftop solar – with continued growth in commercial and industrial installations, but a decline in utility scale solar. The economic fundamentals for residential and commercial PV are outstanding. Australia's high electricity prices and inexpensive PV systems means payback can commonly be achieved in 3-5 years, a situation that looks set to continue in 2019. Commercial PV deployment is likely to accelerate as solar awareness grows, and corporate interest in solar PPAs is building. However, the RET will soon be met by currently committed projects, leaving over 30 GW of PV projects searching for an alternative pathway towards commercialisation. Though a policy gap may occur, there is acceptance amongst incumbent electricity businesses and regulators that renewable energy is the least cost source of new-build electricity, and will soon outcompete Australia's existing generation fleet that are progressively needing refurbishment.

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