

The shifting sands of Australia's large-scale solar boom

Market drivers | Australia's large-scale PV segment has been one of the star performers of the past year. Vincent Dwyer and Jacqueline Fetchet look at the past and future drivers for this dynamic market and ask whether recent momentum can be maintained

Australia is experiencing a solar boom across the National Electricity Market (NEM) in the eastern States that has led to AU\$1.3 billion invested in almost 2GW of utility-scale solar and the growth of rooftop solar capacity to well over 1GW installed in the last 12 months. In 2017 we saw the Australian Renewable Energy Agency (ARENA) provide grants to enable over 500MW worth of projects to reach financial close, the first corporate off-take agreements were signed, and major global players such as Enel and Blackrock entered the market to develop and acquire significant projects.

The sun will keep shining and 2018 will be a year of continued growth at scale as pipelines are financed. Yet the Australian market is not all golden and local developers and new market entrants will face challenges in this constantly shifting market where the energy sector continues to be mired in political tensions and divisive headlines. This year, project design will need to respond to continued policy uncertainty at the Federal level, driven by the introduction of the National Energy Guarantee (NEG) to take effect in 2019; corporate buyers will drive a new off-take market placing higher demands on developers; and grid issues and constraints will put pressure on connection against a politically delicate context.

State-based targets create certainty, with long-term NEM reform anticipated

Australia is fast approaching its Renewable Energy Target (RET) of 33,000GWh by 2020. New projects will soon cease to be accredited for the creation of large-scale generation certificates (LGCs) and the value of LGCs, currently bundled into many off-take agreements, is predicted to decrease. While the federal government pledges that the RET will not be



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replaced by a certificate trading scheme, the details of the NEG are being penned by the Australian Energy Market Commission (AEMC), creating policy uncertainty until the details of the reform and implementation strategy are revealed.

With dual objectives to achieve reliability of supply and reduce emissions, the NEG will link the wholesale energy spot market and the longer-term energy contracts between generators and retailers through the imposition of a 'reliability guarantee' and an 'emissions guarantee'. The reliability guarantee aims to impose an obligation on retailers to meet a proportion of their customer's electricity load from flexible and dispatchable sources, likely increasing demand for storage, whether batteries, pumped hydro or even hydrogen. Under the emissions guarantee, retailers and large users would be given an emissions intensity level and will have to enter into contracts to meet this benchmark. It is contemplated that the NEG may take

Large-scale PV is booming in Australia despite ongoing political challenges

the form of a capacity market. This will potentially shift the design and mechanics of the purely financial NEM and push additional regulatory obligations on generators. The market continues to await more detail on the NEG before passing judgement, though the need for change is evident across the market.

The government is hoping that the NEG will drive market, as well as much needed network, reform. As we outline below, the grid is facing a variety of capacity constraints and a strategic vision for NEM infrastructure is required. AEMC is contemplating the design of Renewable Energy Zones (REZ) that will allow for targeted 'hubs' for large-scale generation, which is likely to drive network augmentation and line duplication. The REZ model is designed to provide additional capacity in the face of the closure of existing, and ageing, coal-fired generation while building on the momentum of development in areas that are currently capacity constrained.

Key regions for REZ locations are anticipated to include south western NSW and north western Victoria (linking in with the pumped hydro project, Snowy 2.0), far north Queensland, New England, NSW and the Eyre Peninsula in South Australia.

Despite ongoing political complexity around energy at all levels of government, states have taken the lead on creating an attractive investment environment by setting emissions reduction or renewable energy targets. In 2017, Queensland led the Solar150 and Solar400 reverse auction to support large-scale renewables, including 100MW of storage, with Solar400 receiving 115 responses to the tender. In February 2018 the Victorian Renewable Energy Auction Scheme will close, a further state-led reverse auction to procure up to 650MW of renewable generation, with a mandate for 100MW of solar. South Australia continues to drive innovation, recently installing a 100MW battery with Tesla in November 2017. The underwriting of renewables projects by governments will spur further development at scale.

Off-take market is shifting as corporates drive demand

Renewable energy corporate power purchase agreements (PPAs) now represent a major shift in the way electricity is procured by organisations. In 2017, Telstra's first corporate PPA resulted in the successful financing of the Emerald Solar Farm in Queensland. Similar deals were closed by SunMetals, Sunshine Coast Council, and Nectar Farms. In January 2018, the University of New South Wales signed a first-of-its kind corporate PPA, enabling the university to achieve carbon neutrality. These deals are opening up the Australian corporate PPA market. Throughout 2018, further corporates will look to sign PPAs as the likes of AB in-Bev, Coles and Monash University run tender processes as off-takers.

Retailer off-take has diminished so developers will increasingly rely on corporates to underwrite projects and attract finance. Corporates are often seeking specific requirements driven by internal objectives and constraints, making corporate PPAs new negotiating territory for developers and lenders alike.

"Firm" supply volumes are often sought, creating an opportunity for hybrid renewable solutions to complement solar, wind and storage with back-up grid supply from a retailer.

Aggregate group buyers or "clubs" are also emerging as we have seen with the Melbourne Renewable Energy Project grouping the likes of the City of Melbourne, Australia Post and NAB to the 80MW Crowlands Wind Farm. In late 2017 Telstra signed its second corporate PPA that linked off-takers Melbourne University, Coca-Cola Amatil and ANZ under an arrangement with Telstra as the intermediary to the first stage of the 226MW Murra Warra Wind Farm.

Lenders to renewables projects signing up with a corporate are focused on a number of key risks. These include the credit worthiness of the off-taker which may be mitigated by credit support from a parent or bank guarantee; volume and supply delivery risk, where we are seeing fixed volumes rather than minimum generation requirements procured; and termination payments or "close-out amounts" if the deal terminates early, leaving the project

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and the corporate exposed. "Change in law" continues to be a concern as bundled deals (for electricity and LGCs) may want rights to alternative green products without opening up the commercial deal if a new policy or scheme is introduced to replace the RET.

Electricity prices in the NEM are anticipated to stay high in the short term, making "merchant" revenue an attractive option for projects reaching commercial operations. Depending on the value of the PPA and the credit worthiness of the off-taker, lenders are still looking for a minimum 50% contracted off-take to underwrite a deal. Developers with strong equity backing may consider 'going merchant' for the medium term, as seen in ESCO Pacific's 2018 deal with Elliot. In December 2017, Wirsol successfully financed the first fully merchant solar deal with the Clean Energy Finance Corporation (CEFC) covering a total of 200MW across the Clermont and Wemen Solar Farms in Queensland and Victoria respectively. Although a well-contracted project remains the most attractive to lenders, with the right debt to equity ratio and a credit-worthy off-taker, we anticipate seeing more projects reach financial close with a higher merchant exposure throughout 2018.

Grid challenges create competition for connection and market risks

Grid stability is a paramount objective of the operation and regulation of the NEM as well as a major political concern to Australian governments. Major blackouts in South Australia in the summer of 2016-17 contributed to the urgency of the Finkel Review of the NEM as well as South Australia's battery build out mentioned above. More recently, Victoria experienced blackouts in response to a heatwave. Both events have been politically contentious. Closure of existing coal-fired generation is putting pressure on government, with the need to ensure sufficient incentives for the market to develop replacement supply. This has important implications for grid infrastructure network support and demand side management activities. Regardless of the technical or political issues, the increase in intermittency and the shift to greater decentralisation (whether utility-scale renewables, "behind-the-meter" or "private wire" solutions) is calling for strategic planning and a long-term vision for the grid.

Developers across the NEM are facing

grid challenges on a day-to-day basis. Network service providers are struggling to keep up with the volume of connection enquiries and applications in the system. Generator performance standards, a crucial technical requirement as part of the connection process, are becoming more rigorous and costly in response to intermittency concerns and the increased oversight of the Australian Energy Market Operator (AEMO) on connection opportunities,

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from a whole of network perspective. Significant additional connections are also resulting in increased capacity constraints in the network. Once connected, generators across SA, QLD and more recently Victoria, have faced curtailment by AEMO, where generation is limited by the central operator to manage system stability and network issues. The combination of grid issues can materially impact both project timetables and financial models of developers.

The location of the project can also affect price and PPA risks, particularly in a network as large as Australia. In late November 2017, AEMO released its revised regional and marginal loss factors (MLF) for 2017-18. MLFs represent electrical transmission losses across the NEM. Significant changes to MLF were incurred due to major changes in load and generation patterns across the NEM, including the closure of the 1,600MW Hazelwood coal-fired power station in

Victoria, decreased gas consumption in Queensland and regional electricity demand increasing in NSW and Victoria while decreasing in Queensland, South Australia and Tasmania. Adjustments to MLF are designed to mitigate uncertainty and volatility of electricity flows in the power system from AEMO's perspective. The practical and commercial impact of increasing or decreasing MLFs is directly felt by developers in their financial models. For example, a reduction in MLF by 0.1 could result in a 10% decrease in net revenue. Both load volumes and LGC calculations take MLF into account.

Hot tips?

Large-scale renewables will continue to shine in the dynamic, competitive and evolving Australian market in 2018. Developers will need to be responsive to changing policy settings, provide innovative solutions to diverse off-taker needs and use technical solutions to mitigate against market risks.

What's hot to watch? Hybrids of "solar + x", whether wind or storage, to meet market reliability and corporate "firming" requirements; corporate "club" buying arrangements where developers will navigate the needs of multiple off-takers; and strategic grid design creating an opportunity for developers to engage with policy and take advantage of grid "hubs" and REZs.

In Australia, the year ahead for solar looks bright. ■

Authors

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