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Solar projects announced in QLD & SA with batteries “as big as football fields”

Lyon Solar today announced it will build a minimum 100MW/100MWh battery in South Australia which will significantly improve the state's energy security and as a result the ability to maintain jobs in the state. The battery, one of the largest in the world, will cover 4 000 square metres – the size of a soccer pitch – and be connected to Lyon's Kingfisher solar project.

Lyon also announced its next Solar + Battery project, to be built in Lakeland, Queensland. The grid-connected project will include 80MWh Solar PV and a minimum 20MW/ 20MWh battery storage module, making it almost 4 times bigger than Lyon's first solar and battery venture (also in Lakeland) which was supported by ARENA funding and recently sold by Lyon.

Lyon Partner David Green said the significant size of the Solar + Battery projects, which were the first of their kind anywhere in the world, dealt with the number one issue facing the Australian energy sector – how to integrate more renewable energy without destabilising the electricity network.

“Battery storage really is the missing piece of the puzzle in Australia's clean energy future, and for that matter anywhere seeking to incorporate large amounts of renewables into the energy mix. These projects will complete the picture,” said Lyon Partner David Green.

“Ultimately, with this breakthrough there is no limit to the amount of renewable projects that can be connected to the electricity grid in Australia or anywhere else in the future.”

Mr Green said that “while Lyon strongly supports Governments' ambitious targets for renewables, the connection of renewables to the grid without batteries to manage their intermittent energy flows has the potential to create problems for the national electricity grid.

“This challenge is increasingly being recognised offshore as Governments mandate that future large scale renewable projects must include batteries, and in some cases, have retrospectively required batteries be integrated with all existing renewable projects.”

100MWh battery at Kingfisher, Roxby Downs

The battery storage facility in South Australia will be one of the world's largest and be connected to Lyon's Kingfisher Solar project. Mr. Green said the company had decided to increase the size of the battery from 20MWh to 100MWh to help address the issues confronting the electricity network in South Australia.

“For large scale solar projects to play an important role in the future of the South Australian economy, we have to deal with the intermittent power that renewable generation produces. We have to translate solar into the secure and reliable source of power 24 hours a day, 7 days a week that it can be and batteries allow us to do that,” Mr Green said.

“A 20MW battery would achieve that at Kingfisher for Roxby Downs, but at 100MW it will not only service that industrial centre, but improve energy security across the state's electricity network.

“At times of need, the battery could ensure the entire state does not face outages, if the interconnector between Victoria and South Australia fails, the battery will instantaneously compensate,” Mr Green said.

Mr Green also said that Lyon is examining expanding the battery to 400MW based on the state's need for energy security.

Stage One of the Kingfisher project is a 20MW solar PV plus minimum 2MW battery storage and will be commercially operational by late 2017. Stage Two will include 100MW solar PV plus minimum 100MW battery and will be developed concurrently.

Lakeland Solar + Battery project

The Lakeland Solar + Battery storage project in Queensland will also be commercially operational by the end of 2017, with the speed of deployment made possible by the lessons learned through Lyon's original battery + storage development at Cook.

"While we have sold the original Solar + Battery project in Cook, we've taken the lessons we learnt through the three years in developing that project and are deploying this proven technology at a much larger scale through the Kingfisher project in South Australia and the Lakeland project in far north Queensland.

"Between the two projects there will be 120MW of battery storage added to the national electricity grid. We plan to more than double that in the following year with battery projects currently in our pipeline that are yet to be announced."

Equity has been raised for both projects and Lyon's equity partners will be announced in September. Both projects will be fully equity funded allowing construction to start on both projects in early 2017.

Huge economic and jobs opportunity

Reflecting on the economic opportunity of Solar + Battery, Mr Green said because Australia would be leading the world in the development of this type of project, there was a huge opportunity for a modern, high tech battery manufacturing and services hub to emerge.

"We expect there to be huge competition for the location of a battery manufacturing hub in Australia."

"We are using battery systems developed by AES, which is the world's most experienced energy storage providers. They will deliver the units to Australia, but the batteries will need to be assembled locally, which will deliver jobs and new knowledge and expertise to Australia."

"And the economic opportunity is much wider than manufacturing, with the establishment of a battery hub in at least one state in Australia to be required. That could include remote servicing capability for other battery projects overseas among other sub industries – we are working through the numerous opportunities to ensure skills and jobs growth in Australia for this growing market."

Mr Green said Lyon Solar had conceived, designed and developed the Solar + Battery technology configuration in Australia not only to address power security issues but as a new way to avoid costly network upgrades on the fringe of the national grid and off grid.

"Providing reliable electricity to areas on the fringe of the electricity grid has traditionally meant massive capital investment in extremely long network lines which is inefficient because of the huge energy loss and loss of energy quality that occurs when transporting electricity across those distances.

And some off grid facilities have significant and expensive network infrastructure, supporting numerous mine sites and smaller townships

"Solar + Battery provides a reliable, secure and less costly alternative to network upgrades, while providing better outcomes for energy users seeking to manage their emissions footprint. For regulators and network owners it solves their network constraints while enhancing reliability and security of supply.

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Lakeland Solar + Battery project (far north Queensland)

- 80MW solar PV plus minimum 20MWh battery.
- Connected to 132kV Ergon network.
- Builds on Lyon's significant development experience with solar plus battery.
- Enhances stability in the fringe of grid with significant battery.
- Commercial Operations Date Q4 2017, with speed to market possible given Lyon's previous work in the Lakeland area.
- First Solar panels.
- SMA inverters.
- AES battery storage and management system.
- Downer EPC contractor.

Kingfisher project information (SA)

- Stage 1 is 20MW solar PV plus minimum 2MWh battery. Q4 2017 Commercial Operations Date.
- Stage 2 100MW solar PV plus minimum 100MWh Mitsubishi / AES battery. By Q1 2018 Commercial Operations Date.
- Lyon is addressing suitability of single axis tracking for harsh desert conditions. Such tracking only has a short installation history (less than 3 years) in other locations of similar climate.
- Connects into the NEM at Roxby Downs.
- Connects to a line that links with working mine sites including Olympic Dam.
- Roxby Downs has the best irradiation in South Australia's National Electricity Market connections.
- Baseload pool prices in SA near \$100/MWh
- First Solar panels.
- SMA inverters.
- AES battery storage and management system.
- Downer EPC contractor.