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Testing grid forming capabilities with AGL's Broken Hill Battery

On behalf of the Australian Government, the Australian Renewable Energy Agency (ARENA) has today announced \$14.84 million in funding to AGL to build a 50 MW / 50 MWh lithium-ion large scale battery storage system with grid forming capabilities at Broken Hill, New South Wales.

Energy storage technology provider Fluence and its consortium partner Valmec has been engaged by AGL to supply the batteries for the \$41 million project which will demonstrate the ability of large scale batteries to be equipped with grid forming inverters to improve system strength and facilitate higher penetrations of variable renewable energy generation at the lowest cost.

Broken Hill has been selected as an ideal candidate site for testing grid forming capabilities due to its fringe of grid location, which results in low system strength.

ARENA CEO Darren Miller said the next step for large scale batteries is to show their capabilities in strengthening the grid as more renewables come online.

"Large scale energy storage is a priority technology for the Australian Government's Technology Roadmap, and a key focus area for ARENA.

Big batteries are already becoming critical to our electricity system, but we know with grid forming inverters they can provide system strength services traditionally provided by thermal generation.

We are particularly interested in seeing how AGL's Broken Hill battery will utilise and demonstrate advanced inverter technology in a weaker section of the electricity grid. We look forward to working with AGL and Fluence in highlighting the potential of large scale batteries to provide a more cost effective solution to providing system stability as the grid takes on more renewable energy," he said.

AGL Chief Operating Officer Markus Brokhof said the Broken Hill battery was another step forward as AGL becomes a leading orchestrator of batteries in Australia.

"As Australia moves forward with its energy transition, we know that firming technologies like batteries play an important role in energy storage and supporting the energy supply," Mr Brokhof said.

"Broken Hill's unique edge-of-grid environment provides an ideal location for this advanced inverter technology to demonstrate how it can facilitate further penetration of renewable energy generation and add to the stability of the wider electricity network."

Advanced inverters enable grid scale and grid connected batteries to provide system stability services traditionally provided by synchronous generation, such as coal or gas. Finding new ways of providing stability to the electricity system will enable the grid to operate with higher shares of variable renewable energy. Grid forming inverters offer a promising solution to improve system strength but have not been previously demonstrated at utility scale in weak parts of the network.

Last year, the Australian Energy Market Operator published its [white paper](#) on advanced inverters highlighting the importance of grid scale batteries equipped with advanced inverter technology in supporting the energy transition.

ARENA recently announced a \$100 million competitive funding round for grid scale batteries equipped with advanced inverters to support the grid, which is currently open for applications.

ARENA has previously funded three other projects which seek to demonstrate advanced inverter functionality, including Electranet's [ESCRI](#) battery, the [Hornsedale Power Reserve expansion](#), and Transgrid's Wallgrove Grid Battery. ESCRI is currently Australia's largest grid connected battery using advanced inverter technology, while [Hornsedale Power Reserve](#) and the Wallgrove Grid Battery will have advanced inverter capability later this year.

AGL's Broken Hill Battery is set to be completed in 2023.

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