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## World-first ‘solar hydro’ power plant addresses need for longer duration energy storage

On behalf of the Australian Government, the Australian Renewable Energy Agency (ARENA) has today announced \$15 million in funding to RayGen Resources Pty Ltd (RayGen) to construct its first of a kind ‘solar hydro’ power plant comprising 4 MW of solar PV generation and 3 MW / 50 MWh (17 hours) of dispatchable storage capacity in north-west Victoria.

RayGen’s ‘solar hydro’ power plant consists of RayGen’s proprietary PV Ultra, a concentrating photovoltaic solar co-generation tower, combined with its patented electro-thermal storage. RayGen’s concentrated PV technology generates heat as a by-product which is captured and used for thermal storage. The electro-thermal storage system consists of an Organic Rankine Cycle (ORC) turbine, industrial chillers and two insulated water-based thermal storage pits or reservoirs, each roughly the size of four Olympic size swimming pools. One of the reservoirs is kept at a temperature of 90 degrees and the other at close to 0 degrees, and the temperature difference is used to generate dispatchable electricity using ORC turbines.

RayGen’s ‘solar hydro’ technology offers a renewable, modular and scalable solution to the emerging need for longer duration storage that has been identified by the Australian Energy Market Operator in its Integrated System Plan.

The \$30 million project includes this fully dispatchable renewable energy facility as well as a new manufacturing facility that will allow RayGen to prepare for forecast growth and expansion of its project pipeline in Australia.

RayGen expects that subsequent larger scale projects will achieve the Low Emissions Technology Statement stretch goal of providing firming renewables for under \$100 / MWh.

The demonstration scale facility will be located in Carwarp, Victoria near Mildura, and will export renewable electricity to the National Electricity Market (NEM). The project will participate in wholesale energy and Frequency Control Ancillary Services (FCAS) markets once operational, and is eligible for Large-scale Generation Certificates.

The company has successfully completed a capital raise for \$27 million in equity from parties including AGL, Schlumberger New Energy, Photon Energy, and Chevron Technology Ventures alongside new and existing investors. RayGen has also negotiated an offtake agreement for the project with AGL.

The project builds on a feasibility study and development work supported by an [ARENA grant of \\$3 million](#) that was announced in March 2020.

ARENA CEO Darren Miller said the success of RayGen’s innovative technology provides an exciting opportunity to address Australia’s emerging longer duration storage needs.

“RayGen’s technology has many benefits for the energy market as we continue the energy system transformation being driven by renewables. Much like combining pumped hydro and a traditional solar farm, RayGen’s technology can provide longer duration firming for renewable energy generation. We are particularly interested in the potential for RayGen’s technology to deliver firming renewable energy at a very competitive cost.

“ARENA has been a strong supporter of RayGen for many years now and we are really pleased to be supporting an Australian company at the cutting edge of renewable energy innovation.”

ARENA previously supported RayGen with a total of \$8.67 million in funding to develop its PV Ultra

technology and build the 1 MW PV Ultra pilot project in Newbridge, Victoria. The pilot project has been operational for over two years powering a local mushroom farm.

For more information on RayGen's technology, visit [raygen.com/technology](https://raygen.com/technology)

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