

**ARENA**



**Australian Government**  
**Australian Renewable  
Energy Agency**



**Australian  
National  
University**

## Media Release

2 November 2016

### **Old dog, new tricks: the oldest form of clean energy could be key to increasing renewables in our national grid**

Hydro could be the key to unlocking cost-effective large-scale energy storage that can stabilise high levels of renewable energy in our national electricity grid.

The Australian Renewable Energy Agency (ARENA) is providing \$449,000 of funding for The Australian National University (ANU) to map potential short-term off-river pumped hydro energy storage (STORES) sites.

ARENA CEO Ivor Frischknecht said the study would unlock new pathways for renewable energy to provide a larger share of generation to the national electricity grid.

“This study will help us see just how cheap, efficient and effective pumped hydro systems can be in providing large-scale, reliable, clean energy storage that can feed into the grid on demand, in a range of suitable locations across Australia,” Mr Frischknecht said.

“The approach uses surplus energy to pump water uphill to a storage reservoir. This water can then be released downhill to generate electricity on demand.

“Whilst there been a recent focus on energy storage technologies such as batteries and solar thermal, the vast majority of existing large-scale energy storage comes from large on-river hydroelectric dams, such as those in Tasmania and the Snowy Mountains.

“There is limited potential for further large-scale hydroelectric systems to be installed in Australia; however there are potentially hundreds of smaller, environmentally suitable, off-river STORES scale sites.”

STORES sites are pairs of reservoirs which are separated by an altitude difference of between 300 - 900 metres, in hilly terrain, and joined by a pipe. Water is circulated between the upper and lower reservoirs in a closed loop to store and generate power.

ANU is partnering with ElectraNet and VTara Energy Group to conduct the Atlas of Pumped Hydro Energy Storage Study and develop a blueprint and cost model to integrate the technology into the electricity grid on national, state and regional levels.

Professor Andrew Blakers from ANU said the low cost and technical maturity of STORES could allow solar photovoltaic and wind energy to reliably reach penetration levels above 50 per cent and push towards 100 per cent renewables.

“Water is constantly flowing between the reservoirs to balance supply and demand, and STORES has the potential to support grid stability through inertial spinning reserve and very fast ramp rates from zero to 100 per cent in minutes,” Professor Blakers said.

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“South Australia has one possible STORES site with an altitude difference of up to 600 metres in the hills to the east of Spencers Gulf. This site could support the development of solar and wind resources in the area.”

Chairman and CEO of VTara Energy Group Dr Clive Stephens said energy storage is increasing in importance as renewable energy penetration increases.

“Pumped hydro is the cheapest form of large scale storage. Off-river pumped hydro can support the electricity network and can be co-located with wind and solar for added benefits,” Dr Stephens said.

The study, which is due to finish in June 2018, will provide regular progress reports.

### **About the Australia Renewable Energy Agency (ARENA)**

ARENA was established by the Australian Government to make renewable energy technologies more affordable and increase the supply of renewable energy in Australia. Through the provision of funding coupled with deep commercial and technical expertise, ARENA provides the support needed to accelerate the development of promising new solutions towards commercialisation. ARENA invests in renewable energy projects across the innovation chain and is committed to sharing knowledge and lessons learned from its portfolio of projects and information about renewable energy. ARENA always looks for at least matched funding from the projects it supports and to date has committed \$1.1 billion in funding to more than 270 projects. For more information, visit [www.arena.gov.au](http://www.arena.gov.au).

### **About Australian National University (ANU)**

ANU is a world-leading university in Australia’s capital city, Canberra. Our location points to our unique history, ties to the Australian Government and special standing as a resource for the Australian people. Our focus on research as an asset, and an approach to education, ensures our graduates are in demand the world-over for their abilities to understand, and apply vision and creativity to addressing complex contemporary challenges.

### **About ElectraNet**

ElectraNet powers people's lives by delivering safe, affordable and reliable solutions to power homes, businesses and the economy. A critical part of the electricity supply chain, our transmission network safely transports electricity over long distances to metropolitan, regional and remote areas. We specialise in asset, project and contract management and our clients include power generators, South Australia's electricity distributor, SA Power Networks, and large directly-connected clients.

### **About VTara Energy Group**

VTara Energy Group is the parent company of Tara Green Energy Pty Ltd., an Australian company that has a long-standing interest in delivering sustainable energy solutions to India. VTara Energy Group currently has several projects in southern India using biomass, solar and hydro technologies.