



Media Release

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21 SEPTEMBER 2017

ARENA funded study identifies 22,000 potential pumped hydro sites across Australia

Australian National University (ANU) researchers have identified over 22,000 sites across Australia with potential for pumped hydro energy storage, as part of an atlas funded by Australian Renewable Energy Agency (ARENA).

More than 12,000 sites were identified in Victoria and NSW, the two states with the most suitable potential upper reservoirs.

The STORES study located almost all the sites away from rivers. All the potential sites identified are outside of national parks and away from urban areas.

Off-river pumped hydro storage requires pairs of reservoirs joined by a pipe with a pump and turbine. Water is then pumped uphill when wind and solar energy is plentiful, and electricity is available on demand by releasing the stored water through a turbine.

On behalf of the Australian Government, ARENA provided a \$449,000 grant to support the STORES study which aims to map a nation-wide atlas of potential off-river pumped hydro locations. A publicly available cost model of pumped hydro is also under development.

ARENA CEO Ivor Frischknecht said the study was the first step to exploring the potential for pumped hydro energy storage, as part of ARENA's focus on flexible capacity to ensure a smooth transition to a renewable energy future.

"Energy storage is an increasingly important part of our electricity system as it allows us to ensure energy is always available even when the sun and wind are not.

"Pumped hydro is the most common and most mature form of energy storage. We are exploring the potential for pumped hydro to play a greater role in delivering Australia's

ARENA media contacts:
0410 724 227
media@arena.gov.au

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information**
arena.gov.au

electricity needs. The findings of this study prove there are opportunities across Australia worthy of further investigation,” Mr Frischknecht said.

ARENA is supporting detailed feasibility studies into expanding Snowy Hydro and into potential pumped hydro projects in the Spencer Gulf in South Australia, in Kidston in Queensland and in Tasmania.

Professor Andrew Blakers, the study’s lead researcher from the ANU Research School of Engineering, said each site had storage potential ranging from of 1 to 300 Gigawatt-hours (GWH).

“To put this in perspective, we believe Australia needs about 450 GWh of storage to support a 100% renewable electricity system. We have found so many good potential sites that only the best 0.1% would need to be developed.

“Pumped hydro has a lifetime of 50 years, and is the lowest cost large-scale energy storage technology,” Professor Blakers said.

The number of potential sites in each state are shown in the table below:

Further work is required to determine which sites are suitable for potential development.

	Approximate number of sites	Approximate energy storage capacity (GWh)	Minimum head (m)
NSW/ACT	8,600	29,000	300
Victoria	4,400	11,000	300
Tasmania	2,050	6,000	300
Queensland	1,770	7,000	300
South Australia	185	500	300
Western Australia	3,800	9,000	200
Northern Territory	1,550	5,000	200
TOTAL	22,000	67,000	

Head refers to the minimum altitude difference between potential upper and lower reservoirs in the data set – Larger is generally better. All identified sites are outside national parks and urban areas.

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