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## Dynamically managing hot water systems in South Australia

On behalf of the Australian Government, the Australian Renewable Energy Agency (ARENA) has announced \$2.72 million in funding to PLUS ES to develop Hot Water Control Load demand management capability (the Portal) that will allow its project partner AGL Energy to access and dynamically manage a fleet of up to 20,000 hot water systems in South Australia via their smart meter - a potential controllable load of up to 48 MW.

AGL Energy will control the hot water load to maximise benefits from the optimisation of hot water demand and take advantage of SA Power Network's 'solar sponge' Time-of-Use tariff that incentivises daytime usage of electricity to enable higher renewable energy generation.

The \$5.4 million project will demonstrate dynamic load control management via Metering Services API, while also helping to inform the design of network controlled load tariffs in locations outside South Australia, and other retail products. Customers with electric hot water systems and time of use tariffs are also expected to see the benefits through cheaper energy prices as their load is shifted into the midday solar sponge period.

Electric hot water systems are currently the largest and most predictable load within the residential sector, which offers significant potential for dynamic load control. Traditionally scheduled to operate during night time off-peak periods, dynamic load control enables the ability to turn systems on or off depending on market and network signals, particularly in the middle of the day when rooftop solar generation is at its peak.

By demonstrating orchestration of hot water at a meaningful scale, the \$5.4 million project aims to provide a pathway to scale-up hot water control in other jurisdictions outside South Australia.

If the project is successful, PLUS ES will look to expand the Portal to be made available to all of their meters in the National Electricity Market (NEM) and eventually to inform a new approach for all off-peak electric hot water systems where a smart meter is installed.

ARENA CEO Darren Miller said the project strongly aligns with ARENA's flexible demand strategic priority which seeks to better match the use of electricity to when renewable energy is cheap and abundant.

"Hot water control has been identified as a low cost solution that could help to address minimum system demand issues across the NEM, highlighting that with the right innovation and technology solutions, we can reduce the need for costly network infrastructure upgrades and make the most of the increasing amounts of low-cost clean energy that we see entering the market."

"The program with PLUS ES and AGL will show how dynamically managing hot water systems presents a scalable solution for controlling a large source of electricity demand in a smarter way that benefits both the customer and retailer.

Jason Clark, Executive General Manager PLUS ES, said hot water systems represented a significant untapped opportunity to assist in providing flexible demand.

"Dynamically controlling hot water helps to manage the grid and allow more renewable generation sources into the market. We are delighted to be involved in the project."

AGL Chief Customer Officer Jo Egan said the learnings from this project will help consumers, other retailers and the broader market understand more about the benefits of retailer-orchestrated DER.

"This project has tremendous opportunities for our customers, for AGL, and for PLUS ES's smart meters across the market. As AGL dynamically manages hot water systems in South Australia for thousands of our customers, we will be taking advantage of high renewable energy generation available during the day, to test if this can help with grid stability and support a reduction in energy prices. This partnership with PLUS ES, which is supported by ARENA, aligns with AGL's commitment to utilise our expertise, work with likeminded businesses and innovate to meet the changing needs of our customers, now and in the future. We are excited to apply the lessons learnt from South Australia to encourage similar programs across the other states for the benefit of our customers, other retailers and the market."

The project is expected to be completed in late 2024.

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