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Smarter energy for Australian supermarkets

On behalf of the Australian Government, the Australian Renewable Energy Agency (ARENA) has today announced \$3.7 million in funding to Enel X to demonstrate and scale flexible demand solutions in the commercial and industrial refrigeration sector.

The 'Unlocking Flexible Demand in the Commercial Refrigeration Sector' project is seeking to recruit 440 supermarkets and 13 refrigerated warehouses to aggregate 20.9 MW of flexible demand across the National Electricity Market.

The supermarkets and warehouses will participate within Enel X's virtual power plant (VPP), to provide services in support of Australia's electricity system. The facilities involved will help alleviate grid constraints and support the safe and reliable supply of electricity to all consumers while being financially rewarded for doing so via Enel X's VPP.

Commercial and industrial refrigeration provide an ideal source of flexible demand on a large scale, with an estimated 500 MW of potential flexible demand in refrigeration across Australia's supermarkets, grocery stores, beverage shops and warehouses. Flexible demand is the coordinated orchestration of electrical load to ease pressure on the grid. As variable renewable sources like wind and solar produce a greater share of Australia's electricity generation, solutions are required to help match up supply and demand.

Energy storage is one part of the equation, but shifting demand away from peak times and reducing demand at critical times can complement this and reduce the overall cost of energy and support integration of renewables into the grid.

Refrigeration, like other forms of heating and cooling, offers a valuable source of flexible demand due to the thermal mass of facilities maintaining temperatures even when refrigerators and chillers are ramped down. Small changes to power usage can have a large impact when aggregated to scale, with no noticeable change for users or impact on product quality.

Enel X has engaged a Tier 1 Grocery chain as an initial supermarket partner, with a 20 store pilot extending to up to 250 stores participating in the VPP. Lineage Logistics will also take part in the project with 13 refrigerated warehouse sites. Enel X is actively recruiting commercial refrigeration businesses across supermarket, grocery, beverage, convenience and last mile logistics to fulfill ARENA's 440 store funding support.

The project aims to demonstrate the business case for flexible demand solutions in refrigeration and to derisk the uptake of new technology for prospective demand response providers.

ARENA CEO Darren Miller said the project can pave the way for further investment in flexible demand.

"Our electricity grid is changing, and a more variable supply requires more flexible demand," Mr Miller said.

"Commercial refrigeration can unlock this opportunity at a material scale, so we're excited to see the Enel X project rolled out across Australian supermarkets and other businesses with refrigeration.

We want to see projects like this demonstrate the benefits of flexible demand – to individual electricity users and all users via a more efficient grid.

By demonstrating and proving the technology to prospective users, we're hoping to see increased uptake as electricity users look to it as an attractive option."

Jeff Renaud, Managing Director of Enel X APAC, noted that "The energy market needs new ways to balance renewables and businesses need new ways to reduce energy costs. With ARENA's support, we will prove that small-scale refrigeration systems, when plugged into a virtual power plant, can make a large-scale contribution to the renewable energy transition."

ARENA has previously supported Shell Energy Australia with a \$9.1 million grant to trial flexible demand solutions across shopping centres, supermarkets and distribution centres.

The 'Unlocking Flexible Demand in the Commercial Refrigeration Sector' project is due to be completed in 2027.

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