VPP programmes show their worth in US and Australia

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EEnergy Informer editor Fereidoon Sioshansi presents insights into virtual power plants (VPPs), drawing from recent examples of their use in the US and Australia.

First came rooftop solar PVs, followed by electric vehicles and distributed storage in the form of batteries. The former turned consumers into prosumers, the latter into prosumagers. As their numbers continue to increase, a number of utilities, distribution companies, retailers as well as intermediaries see a golden opportunity to aggregate large numbers of them into a sizeable flexible resource – one that can absorb and store the excess renewable generation when it is plentiful and cheap, feeding it back into the grid at times when supplies are scarce and prices are high.

The concept, broadly referred to as virtual power plants or VPPs, makes perfect business sense – and the economics look promising as the costs of both PVs and EVs continues to decline as the following two anecdotes illustrate.

After a successful trial, Vermont regulators approved a scheme by electric services company Green Mountain Power (GMP) that includes special rates for customer-sited battery storage including what GMP calls bring your own device or BYOD option.

Starting in June 2020, customers can enrol in GMP's Tesla Powerwall programme or subscribe to rates with their own storage system for the next 15 years. GMP claims to be the first in the US to use customer-sited stored energy to lower peak demand while lowering costs for all customers, not just those who participate in the scheme.

According to Josh Castonguay, chief officer of innovation at the utility, GMP is "… really anxious to retire tens of MW of fossil-fuel powered peaker plants over the next few years," replacing them, in part, with small-scale, distributed customer-owned energy storage systems.

GMP says it already has roughly 14MW of distributed, small-scale residential batteries on its grid, and about 100MW of peaking facilities. The utility partnered with Tesla nearly five years ago, to unlock the potential of small-scale storage to address energy demand peaks, and discussions with local installers led to the BYOD programme.

Meanwhile, Ausgrid, a large electricity network company in New South Wales, Australia, has launched the second phase of its household battery based VPP with two aggregator partners: ShineHub and Evergen. The new phase of the VPP scheme follows on successful prior trials in 2019, which demonstrated the feasibility of a 1MW VPP with 270 participating customers in 170 suburbs around Sydney.

As reported in the 29 May issue of *Renew Economy*, the Ausgrid programme aims to engage aggregators of behind-the-meter energy storage to provide a commercially viable demand management service to the grid, while also offering customers an additional revenue stream from their home batteries. The initial phase of the trial conducted with Reposit Power was highly encouraging, according to Ausgrid, leading to the current scheme. More than 200 customers participating in the trial provided a combined solar + storage capacity of 2.4MWh and an aggregated storage capacity of 1MW.

Such VPPs providing dispatchable capacity will be highly coveted by network operators particularly during the evening peak, when rooftop solar systems stop generating just as residential demand peaks.

According to Ausgrid's chief customer officer Rob Amphlett Lewis, participants in the prior trial earned up to AUD$200/yr (£111/yr) in addition to "significant bill savings from generating and storing their own power." He added, "Results highlight the significant potential for the orchestration of residential batteries to support Ausgrid's network needs … (while) ... offering both a cost-effective source of demand reductions for Ausgrid and additional income for customers."

He continued: "The VPP allows households to collect solar energy, store it safely locally and then feed it into the network when required during peak demand."

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