

Prosumage and digitised E-lectricity on the grids' edge: Perry Sioshansi's Letter from America

Speculation is rife about disruptions in the electric power business.

The latest craze these days is peer-to-peer transactions taking place among consumers/prosumers using electronic platforms to trade surplus electricity from rooftop solar panels, share a storage battery in the garage or smart gadgets that better manage load, self-generation and storage. The new buzz word is prosumage. With the arrival of storage, prosumer is passé. Future is becoming blurred as a growing number of consumers engage in self-generation and invest in storage, whose costs are projected to drop. Exciting things, we are told, are happening at the grid's edge—whatever that means. There is talk of e-lectricity and digital utilities. It sounds great. This editor, however, is not entirely sure what any of these words or concepts really mean.

What exactly is driving the interest and excitement? Most important may be efforts by smart entrepreneurs who are trying to disrupt the protected world of electric monopolies just as Ubers and Airbnbs have disrupted other established businesses by offering alternatives that may be cheaper, more convenient or both. But how?

The most obvious and successful so far have been the solar PV installers. They have managed to find a niche – miniscule so far – by offering customers with big roof in sunny areas facing high retail tariffs to buy less of the expensive stuff. Utilities, of course, have been fighting them tooth and nails and winning small battles if not the war.

Next may be storage devices that store some of the excess self-generation for use at other times. Companies in the US and Australia, among others, are entering the business even before Tesla's mega-factory begins producing sufficient number of batteries to go around. Electric vehicles may become handy too. Then there are companies who think that the future is in better control and management of customers' loads. There are a variety of these, some focused on load management, demand response or a combination of the two.

Others are focused on aggregating smallish loads into big ones and managing them as a semi-autonomous micro-grid. In this case, an entire neighbourhood, subdivision or city could be managed in such a way that it imposes less stress on the mega-grid while providing resilience or backup when the latter is stressed. Susan Kennedy, the CEO of Advanced Microgrid Solutions, for example, described how her firm manages a large number of commercial buildings comprising roughly 50MW of load in Orange County in a pilot project with Southern California Edison Company.

The grid's edge, however, is also getting crowded by a number of start-ups who have never seen a power plant or a substation. As far as they are concerned, the less they know about the stodgy industry the better. The plan is to disrupt where the defences are the weakest. At first glance, monopoly utilities, who have never had to compete with anyone, don't know how to market anything, have never bothered to get to know or care about their customers, are easy targets. But how vulnerable are they?

Smart entrepreneurs in the US, Australia, and elsewhere are pushing the envelope on solar sharing schemes, driven by the fact that not everyone has a roof or can put panels on the roof. As reported by Australian Broadcasting Corp. (ABC), "the concept of bypassing major energy retailers to trade rooftop solar-generated electricity between households, small businesses and community groups is inching closer to reality." ABC reported, "One Sydney entrepreneur has devised a system that would allow consumers to set up a virtual shop to trade their surplus energy with other households, small businesses and community groups in their grid."

Jitendra Tomar, Sydney-based start-up Local Volts, said it was about changing the way consumers buy electricity. "Anybody, whether you're big or small, whether you're a farmer or residential person, whether you're a high school or tennis club, can become an energy farmer." He is not the only one with such an idea. The question is will such schemes work in large numbers, especially if there are no incentives – as is currently the case in Australia.

A number of startups, for example, are trying to offer what amounts to community solar options but with no hassle, high-tech twist. The business model is as simple as pizza delivery; just a few clicks and you are set to go. Companies such as Cloud Source and Yeloha for example, allow a solar host – e.g., someone with a large sunny roof – to share

some of the extra juice with a solar recipient – e.g., an environmentally conscious apartment dweller – without either party having to do or invest anything other than a few clicks on the keyboard.

Once the host and recipient have been electronically matched, the solar panels will be installed on the former, extra juice delivered to the latter, both enjoying some reduction in their monthly electricity bills with no risk and no investment. The back office will magically take care of all the paperwork. If it sounds too good to be true, you are in the same camp as this newsletter's editor – but this being a free country, people can pretty much do as they please.

Will all the exciting stuff happening at the grid's edge amount to anything? All indications are that many bright minds are trying very hard – and sooner or later some will succeed to find profitable niches. And those will be the future SolarCities and Teslas.

Despite their many obvious flaws and inefficiencies, however, electric monopolies, may be more difficult to disrupt than many start-ups believe. The existing distribution network and the ubiquitous copper wire that reaches out to every customer in the rich parts of the world delivers reliable power, most of the time, at a cost that is hard to beat – the cost of storage has to fall quite a bit and become far more reliable. And while solar PVs can generate juice when the sun is shining, and batteries can store some of it for use at other times, the great majority of customers may not have sufficient incentives to cut the cord. And for those who do, they may miss the reliability of the network.

The mobile phone analogy simply does not apply. Service reliability comes with physical connectivity. Which suggests that most customers will decide to remain connected and pay for connectivity even if they draw less or virtually no juice from the grid. As this writer sees it, lots of exciting things may be happening at the grid's edge, but only a handful of customers will ultimately cut the cord.

Perry Sioshansi is a specialist in electricity sector restructuring. He is founder and president of Menlo Energy Economics and is the editor and publisher of *EEnergy Informer*, from which we have sourced this article, and which we commend.

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