

Book review

9 Apr 2020

CA Current

<http://cacurrent.com/subscriber/archives/39600>

The Behind-The-Meter Frontier

Your home could also be your power plant, according to an April 7 article in *Wired* Magazine. It highlights a community housing project in Colorado that's experimenting with advanced software that tracks the units' solar power and directs it to where it's needed—relaying it from those with surplus PV output to those that need more power. A new book delves into the nitty gritty of similar and more broad-based production, use, storage and trading of behind-the-meter alternative energy technologies.

Behind and Beyond the Meter: Digitalization, Aggregation, Optimization, and Monetization, edited by Fereidoon Sioshansi, looks at the rapidly changing energy sector driven by the rise of renewable resources on the supply side and equally dramatic developments on the demand side, including distributed generation and storage, electric vehicles and other like innovations.

In California, self-generation is expected to reduce the amount of energy purchased from the grid by 50 GWh by 2030. The same is happening in Australia, with a population of 24 million with over 2 million solar roofs.

"KWhs consumed will no longer equal the kWhs sold to customers," Sioshansi, who is also president of Menlo Energy Economics, said. This is something not imagined by many utility executives a decade ago.

The book puts the power industry changes in context, starting with historical energy use and generation being produced by large central power plants and delivered to customers through a one-way transmission and distribution system. It shows how this system is being made increasingly redundant by consumers generating, storing and using much of their energy locally.

But greater expansion of this consumer-driven paradigm depends on the ability to share or trade flows of energy with others via the distribution network, the book argues.

It exams how distributed assets can be aggregated and remotely monitored to unleash its value. That includes going beyond consumers trading among themselves to intermediaries and aggregators combining large numbers of people who produce, store and trade behind-the-meter resources.

The book also details how aggregators with intelligent software could create value by improving the generation, consumption, storage and trading of local resources. "A smart intermediary may soon monitor and manage the flows of electrons in a more

complex way,” it projects. And, much of the data and communication between various devices and agents may soon be handled in the “cloud.”

“It’s not far fetched,” to imagine a future with many net zero energy communities, those generating and feeding into the network as many kWhs as they take out, Sioshansi emphasized.

Standing in the way are regulatory barriers, including those that thwart localized trading of power. The editor and contributors urge regulators to avoid stifling innovation and instead to encourage and reward this energy innovation.

The newly published book on behind-the meter energy is available at <https://www.elsevier.com/books/behind-and-beyond-the-meter/sioshansi/978-0-12-819951-0>. A 30 percent discount with use of the code ATR30