Big Oil is looking to conduct a big power experiment in your house

Big Oil wants to put a box in your hall closet that works like a human brain, can cut the lights, stop the refrigerator and will know how you move about in the privacy of your home better than you do.

Sounds worrying? It’s one of the ideas the world’s largest oil companies are experimenting with to survive in a low-carbon world.

Companies like Lightsource BP, in which British oil major BP Plc holds a stake, are trialing smart systems in people’s homes that will do everything from generating solar power, storing it and managing consumption. Much like Spotify Technology SA gives users instant access to thousands of cool playlists without having to spend years building up their own

collection, Lightsource BP wants to make sophisticated renewable power systems available to average people.

They are figuring out how to go big on electricity as demand surges with rising prosperity around the world while investors and activists put them under immense pressure to adopt green policies. However, concerns over climate mean the power industry of the future will be nothing like the past as focus shifts to efficiency and carbon-free electricity.

Todd Hill, an electrical engineer from Melbourne, lives in a four-bedroom house in a hilly town south of London with his wife and two daughters, represents what Lightsource BP thinks is possible.

After he moved into a new home in 2013, he installed 23 photo-voltaic panels on the roof capable of generating 5.3 kilowatts of power, about enough for his family of four. Lightsource BP added a battery to store the electricity the panels generate, an inverter which can be programmed to dispatch the stored electrons when needed, and a diverter to send surplus power to heat the water in his tank.
Hill controls this kit, which he estimates cost about $13,000, with an app that gives real time information. So he could be camel-riding in Mongolia and the technology will still know the best time to generate power in his England home and charge the battery. At night, when the solar panels are effectively useless, the battery can juice-up his electric car.

“The main aim is to use everything we generate within the home,” Hill, wearing a dark green shirt with a windmill on it, said over a cup of tea in his kitchen. “So anything that goes from the PV to the grid is a wasted opportunity that we can save money on.”

For anyone with less interest in tinkering with their day-to-day power use, Lightsource BP is offering to take control. The company specializes in efficiently generating Hill’s own electricity so he doesn’t produce any surplus which can only

be sold to the grid at discounted prices. And ensures he doesn’t end up buying more expensive fossil fuel-generated power.

When the customer moves around the house, the artificial intelligence box learns patterns, like when a person works from home, or is on vacation, with the purpose of closely matching electricity generation with in-house consumption. It can do things like predict the next day’s weather, detect individual appliances, collect data on how often and at what times they are used, and help produce a greater share of the power at home.

Hill is one of 200 people who tested a smart energy-management system for Electricity de France SA local unit and Lightsource BP, in whose lab he also works.

Most utilities potentially have a problem on their hands as more people generate their own electricity. In the U.K. about 27% of power is now produced outside of the big and hulking power stations of the past, according to National Grid Plc data. That could jump to as high as 46% by 2030.
A spokesman for EDF’s unit EDF Energy said it aims to provide a range of “energy services,” to customers to keep them on board. Its trial with Lightsource BP ended in 2018 but it’s running other experiments, such as offering discounted batteries to homeowners with solar panels.

“Once you get the customer on your side, it’s like an Apple ecosystem; those companies will make it really hard to switch providers,” said Elchin Mammadov, a utilities analyst at Bloomberg Intelligence. “It’s trying to make this offering more sticky and then you can up-sell other services.”

A profitable business for the companies could be managing the power grid itself. A network of homes and businesses with solar panels and batteries could potentially replace some of the giant power stations in the futures. Companies with access to these homes could help balance supply and demand for a fee.

“There’s going to be more and more electricity demand,” said Kareen Boutonnat, Lightsource BP’s chief operating officer. “You can manage that by effectively putting in a lot more generation and having generation on reserve and spending billions on having to upgrade the grid, or you can do that by having this type of smart system.”

More of the biggest oil companies are considering these smart power systems. Royal Dutch Shell Plc, which bought a big U.K. utility in 2017 and wants to be the world’s biggest electricity supplier, will also offer a range of smart home energy devices. It expects its power unit to eventually generate returns of as much as 10%, close to what it gets from producing and selling oil. French major Total SA has also acquired a large company, Direct Energie, and is examining different business models.

They also have tough competition from existing utilities and Silicon Valley tech companies, who are also trying to find the future’s winning power formula. Mammadov said these experimental businesses will probably be loss-making for the foreseeable future.

Meanwhile, at Hill’s home, they are looking forward to summer. That’s when he generates so much extra power that his family can take hot showers without having to turn the boiler on.