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Even Newer Power

By Walt Patterson

The UK has been trying for two decades to make an electricity market work. Now they're gearing up for yet another go. They'll be hoping this version meets its stated aims better than the previous three. But their real problem may be lack of ambition.

The latest attempt, launched for consultation in December by DECC and the Treasury, has four main pillars: a floor-price for carbon emissions; a distinctive form of feed-in tariff; capacity payments for generation; and an emission performance standard.

No one yet knows how or indeed if these various schemes will function, to say nothing of how they may interact. In any case, whether this convoluted arrangement, with so much government string-pulling, can any longer be called an 'electricity market' is debatable. After so many attempts and such limited success, the time has come to ask whether the whole approach is fundamentally misguided - whether we need to rethink the very idea of an electricity market.

The idea arose in haste after the 1987 election, when the Thatcher government was looking for further state-owned enterprises to sell. The earlier sale of British Gas, with its 'Tell Sid' advertising campaign, had been a gratifying success. But British Gas as a privatized monopoly threw its weight around even more aggressively, and had to be dismantled. Free-market Tories did not want to see electricity go the same way. They therefore decided to break up the electricity system and introduce competition. They invented an electricity market, modeled on the market for natural gas - a commodity market in kilowatt-hours.

What then happened is summarized in a new report from the Green Alliance. In *Towards A Bright Future*, Professor Steve Thomas of Greenwich University shows how the three versions of an electricity market thus far - the Pool, NETA and BETTA in succession - all fell far short of their objectives. To be sure, some fortunate participants did very well. Those less fortunate lost their jobs, their shirts and their companies. Regulation - expected to vanish - became instead a centrepiece of the industry. It still is.

The original UK liberalizers proclaimed a rosy future, in which many generators would compete for customers in an open, liquid and transparent electricity market, with accessible and accurate price signals for both users and investors. Instead we now have an oligopoly of vertically-integrated companies. Their transactions are opaque and seemingly arbitrary. Their retail prices move in lockstep and appear to bear little relation to the cost of the imported gas that now fuels most generation. Their profits soar even as they decree yet another price increase.

The prevailing arrangement also fails to support the UK government's targets for generating renewable electricity and reducing greenhouse gas emissions. Indeed it provides little incentive for new generation of any kind. Despite the impending closure of the UK'S existing geriatric nuclear plant and most of its coal-fired plant, the most popular choices remain gas-fired plant relying on imports from potentially unreliable suppliers, and traditional unabated coal-fired plant. Hence, in part, this latest shakeup. Nevertheless, dramatic though it is, it does not go nearly far enough.

The trouble with an 'electricity market' starts with the analogy with natural gas. Like natural gas, electricity can be measured by a meter, and bought and sold by the unit. But natural gas is a physical commodity. It can be stored and withheld from the market until the seller likes the price. In that sense electricity is not a commodity. It is a process in technology. Indeed without technology electricity as a commercial entity does not even exist.

Selling part of a process raises obvious difficulties in a competitive market. Competition can only arise if a market has more to sell than buyers desire. Only then can buyers choose. A competitive market in kilowatt-hours must therefore include more generation on offer than users need, at any given time of day or year. If, however, you are a generator in a market in kilowatt-hours, you earn revenue only when your generation is part of the process, in real time. If you are not connected, your asset is earning nothing. That uncertainty alone makes generation in this market a risky investment - hence the latest proposal to add a 'capacity' payment, no longer dependent on kilowatt-hours generated and accordingly completely outside the market.

When you add the questionmark over the price of a kilowatt-hour a decade or more hence, when traditional large-scale generation would still be trying to recover its capital cost, the risk for prospective investors in generation is compounded. A volatile and unpredictable spot price per kilowatt-hour is a precarious basis for a business whose investments may take not years but decades to earn a return. Participating companies have long since resorted to wholesale contracts that effectively bypass the much-ballyhooed electricity market entirely.

An electricity system includes not only the generation and the network but also, essential and arguably most important, the user-technology - lamps, motors, heaters, chillers, electronics - that actually delivers the services of illumination, comfort, motive power and so on. The original electricity entrepreneurs, Edison and Swan and their competitors, understood this very well. They supplied all the technology, including the lamps, all optimized for the best possible performance; and they charged customers according to how many lamps they used. They sold illumination.

By 1885, however, the advent of a practical electricity meter changed the game. The entrepreneurs began to sell not a service but electricity itself, by the unit. Henceforth they wanted their customers to use as much electricity as possible. Inefficient lamps and motors thus meant more revenue for the electricity companies. That perverse incentive persists to this day. It lies at the heart of the business plans of electricity companies not only in the UK but all over the world.

It is an obvious point, though stubbornly overlooked. Indeed it applies not only to electricity but to all human uses of energy; and it is getting us into ever deeper trouble. Two of the most urgent issues now facing policy-makers, energy security and climate change, arise primarily because of society's dependence on fuel - not 'energy' but quite specifically fuel. A 'low-carbon' future means a low-fuel future. Nevertheless those whose business is selling fuel understandably want us to use as much as

possible. The competition that really matters, therefore, is not that between different fuel-providers; it is between fuel and user-technology. The better the user-technology, the less fuel it needs to deliver the services we desire. Better user-technology is the first key to the low-carbon, low-fuel future.

The second key is electricity. We now use two kinds. One we generate using the stored energy in fuel, such as coal, natural gas or uranium. The other we generate using technology to convert natural ambient energy into electricity, including hydro, wind, photovoltaic, solar thermal, wave, tidal and geothermal. Most people call it 'renewable'. A more accurate term is 'infrastructure electricity'. Infrastructure electricity does not use fuel.

Why, then, try yet again to reform an electricity market that nobody wants to use, that has long since failed to deliver its purported objectives, and now falls far short of society's requirements? If we need to intervene at every turn, why not do so coherently, with society's purpose in mind? Why not follow the original example of Edison and Swan and sell what customers actually want? No one wants electricity. People want the services they get from electric technology - their own user-technology. Why not foster a market to deliver, upgrade and improve these services?

Start with OFGEM. In its role to defend electricity users, its aim has always been to keep the price of a kilowatt-hour as low as possible. But most electricity users - certainly most domestic users - have no idea what price they are being charged per unit of electricity. What they want is a low bill, not a low unit price. The two are not equivalent. On the contrary, expensive electricity may be the stimulus to upgrade user-technology such as buildings, fittings and appliances - gaining both better services and lower bills.

OFGEM should therefore be aiming to keep down not the unit price of electricity but customers' bills. That opens a whole new chapter of possibilities. OFGEM then has to consider the whole electricity system, including the user-technology, as a focus of policy. Its challenge is then to stimulate investment not only in generation or networks, but explicitly and actively in user-technology as well, and indeed as a priority.

Some of the requisite groundwork for this major transition has already been laid. The Green Deal, set to be a key feature of the UK coalition government's future energy policy, is intended to foster such investment, by tying it not to the user of the property but to the property itself. In that way the company making the investment continues to earn a return on it, through a surcharge on the bill, even if the owner changes supplier or the property changes hands. That makes the investment low-risk, effectively guaranteed so long as the property itself remains in use. The user, meanwhile, gets a bill that will be lower, even with the surcharge, because of the performance upgrade the investment achieves.

Making supply companies take this option seriously, however, will entail persuading them to change their business plans and restrain their enthusiasm for simply selling more kilowatt-hours. On the customers' side, the obvious candidate to give a lead is one of the largest energy users in the country - the UK government itself. It has proclaimed its green intentions, and set itself targets for improvement. It now needs to track and publicize its own efforts, on a continuous basis, to demonstrate to private industry and the electorate the advantages of an active, focused programme to upgrade the performance of buildings and other user-technology.

It should be aiming to transform the market for kilowatt-hours into a market for electricity services, offering appropriate contracts to companies competing to deliver them. At the same time, to foster the move from fuel-based to infrastructure electricity, it should endeavour, using the numerous levers available through taxation, permitting and regulation, to make the cleanest electricity also the cheapest.

Our dependence on fuel threatens energy security and climate security. We can reduce those threats by upgrading user-technology and moving from fuel-based to infrastructure electricity. Electricity companies are ideally suited to take the lead. Two decades ago the UK pioneered the liberalization of electricity. The UK should now demonstrate an ambitious and exhilarating new vision: sustainable electricity for a sustainable society.

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