

Submission to Ofgem consultation

Future arrangements for the electricity system operator: its role and structure

Viv's Power Pricing Mechanism

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Contents

- 1 Introduction
- 2 Some problems of the current system
- 3 The system players
- 4 How the Mechanism works
- 5 Discussion
- 6 Conclusion

Case Study

I offer this idea to your consultation in the trust and belief that you will pay me an appropriate consultancy fee if my ideas are substantially taken up by Ofgem or National Grid, or adapted for gas, water or data.

Viv's Power Pricing Mechanism

1. Introduction

This paper is in response to the consultation by OFGEM on the future of the National Grid. I am a graduate of The University of York, where I studied *Environmental Economics and Environmental Management*. For the last decade I have been considering how I would reform the domestic energy market, and this consultation is the ideal opportunity to put forward my thoughts to the right people.

The consultation is considering splitting the National Grid into two, with a system operator working in the interest of the consumer. This is timely, because The Competition and Markets Authority estimated that in 2015 domestic customers as a whole paid around £2 billion over what they should have done in a well-functioning retail energy market.

My idea is for an alternative way to distribute and sell electricity to households, with the objective of reducing both demand and bills. It is a holistic and innovative disruption to the domestic energy market, driving competition and efficiency at every level. In accordance with the OFGEM consultation, customer benefit is the core focus of the system.

2. Some problems of the current system

The Energy Companies

What I find particularly inequitable about the way energy companies set up their bills is the standing charge and two-tier pricing, because they punish the frugal poor whilst favouring the profligate rich.

- Most companies have a standing charge, so when a frugal customer saves 10% of their electricity consumption, they will save less than 10% off their bill. The Standing Charge cushions energy companies because it is a guaranteed income regardless of sales. It gives comfort to their accounts department, but a comfortable accountant was never an objective of the open energy market.
- Two tier pricing. When a cheaper tariff is given after a certain level of consumption, it rewards profligate users. To them, the marginal cost of the final unit of energy consumed is less than the average, so switching off a light often isn't deemed worth the effort.

The curious conundrum about electricity supply is that we have tasked private companies with selling us a polluting product for profit. In many respects these energy companies try to behave like the manufacturers of widgets, but the analogy doesn't bear scrutiny:-

- The budget-widget is piled-high and sold-cheap. Energy is not like the budget-widget as it is in the interests of the environment and future generations that we should actively reduce our consumption of this product and not seek to sell more, because currently the bulk supplies generated from fossil fuels or nuclear are polluting.
- The wonder-widget is sold at a premium price. Electricity companies cannot differentiate their product like this because to their consumers, all the power coming out of their wall sockets is identical, regardless of 'brand'. Since they cannot compete with their product, they have developed ever more complicated 'offers' that confuse customers

- The sales team that sells widgets is applauded for record sales, whilst the energy sales team somehow needs to sell us less whilst keeping their employer in profit.

The only real comparison between Energy and widget companies is that both may have shareholders who want a maximum return on their investment. Maybe they are more like early railway companies, who weren't averse to playing dirty tricks on rivals even if it was to the detriment of customers; it certainly felt like that to those who got a SMART meter that would not work for another company. Our electricity generators need a new market framework whereby they can make profit and invest in cleaner technology within a competitive environment.

Sticky Customers

The Competition and Markets Authority estimated that in 2015 domestic customers as a whole paid around £2 billion over what they should have done in a well-functioning retail energy market.

It does not follow that yet more choice or targeted marketing messages will persuade these 'sticky customers' to switch because every variable put forward by the marketing departments of the energy companies, even a free M&S voucher for a friend, adds to the choice and thereby the confusion of consumers. How do you compare that M&S voucher with the free light-bulb replacement service offered by another supplier? I believe the consumer-supplier interface as it currently operates causes friction, both fiscally and emotionally. Overall it is not financially efficient or environmentally effective, but creates customer stress and adds to the Gross National Misery.

I do not believe that energy companies are competing fairly; for them it should be about supply and wonderful customer service. Instead they have developed the cynical ploy of *Tease and Squeeze*, that is giving a deal too good to be true at the start of a contract, which reverts to something far more expensive when the contract ends and the forgetful customer does not renew immediately.

Distribution

Distribution Network Operators run natural monopolies and given that their services are required by all citizens in their area I see no benefit to them remaining private. I see their situation as analogous to the railway track; the electricity generators are like Train Operating Companies, and the distribution system is like Network Rail which is owned by the Department of Transport.

3. The system players of Viv's Power Pricing Mechanism

This is a new sort of market framework for the whole energy system, from electricity generator to household consumer. Competition is introduced throughout the system in novel ways. There are three levels to consider; generators & suppliers, National Grid, and households.

- The Generators & suppliers may be large scale or local. They will compete to sell to the National Grid, and pay for transmission costs.
- The National Grid will be split up. One part will operate all the transmission and distribution networks and they will also continue to balance the system. The other part will act as an 'Honest Broker' and purchase wholesale supplies from generators and international brokers

and sell it on to householders. This will be done via regional 'desks' that compete to buy supplies on behalf of their geographical area.

- Consumers will purchase their supplies from National Grid via their regional 'desk' and so will avoid the friction, inefficiency and stress of dealing directly with suppliers. However, there will be competition introduced between these consumers for the tariff rate they pay per unit, which will reduce demand by rewarding frugal users.

Generators and suppliers

Generators and suppliers sell energy directly to the National Grid SO, where they will have a choice of many different 'customers' at the regional 'desks' that will be competing for capacity. They will compete on the factors that should matter, such as wholesale price, fuel type, transmission costs, and availability. They will no longer be able to sell directly to domestic customers or to have 'vertical' operations.

The National Grid SO may be required to buy a predetermined mix of supply

- Maximum amount of fossil fuel generation
- Minimum or maximum amount of nuclear
- Minimum amount of Renewable
- Maximum bought ahead at a fixed price
- Maximum bought from overseas via interconnectors
- Guarantee for small generators with feed-in tariffs

The National Grid

The Government Proposal is that the National Grid splits into a Transmission Owner Arm (TO) and an independent electricity system operator (SO), with different staff and buildings.

I think that the System Operator should act as an 'honest broker' between suppliers and customers, who will have confidence in their impartiality. This operation can be divided into geographical 'desks'. My suggestion is that each desk should be based on a postcode area, of which there are 124, because they are readily understood, they contain a mix of urban and rural households and the data is easy to obtain. Each desk will have the dual function of wholesale purchase (WP) and consumer supply (CS) for its area.

Tease and Squeeze offers to gullible consumers will be a thing of the past since the suppliers will be selling to professional brokers who will not be influenced by frippery, and so prices will driven down for the consumers in their area.

Wholesale Purchase function

- Each desk will be in competition with the 123 others for good wholesale deals from suppliers
- Wholesale Purchase can be from a big generator or an international broker. The scheme, with internalised transmission costs, should particularly favour small, local generators with low distribution costs. Wholesale prices will be tracked.
- WP may need to adhere to a predetermined mix of supply. (see above)

- WP is also responsible for making sure that supply meets demand on a half-hourly basis, guided by the Transmission arm of National Grid.
- The Transmission Arm will need to charge a market rate for use of the network for transmission and distribution

Consumer Supply function

- metering,
- devise a market reference price (as used in *Contract for Difference*)
- billing
- customer service.

Consumers

This is the most radical part of my scheme, because for the first time ever, there will be competition between consumers for the tariff they will pay for a commodity. As an example, a competition to determine a tariff may be held for the tranche of consumers living in the BH postcode in Band D properties. This competition is designed to drive down demand.

- All consumers will purchase their electric supply from their area desk of the National Grid. The professional brokers will have secured a 'good' deal for their area as a whole.
- Households will be allocated into a tranche of similar properties. My suggestion is that each tranche should be based on their Council Tax Band, which is readily understood and the data easy to obtain.
- Consumers may be able to see how their household consumption compares with others in their tranche via their SMART meter.

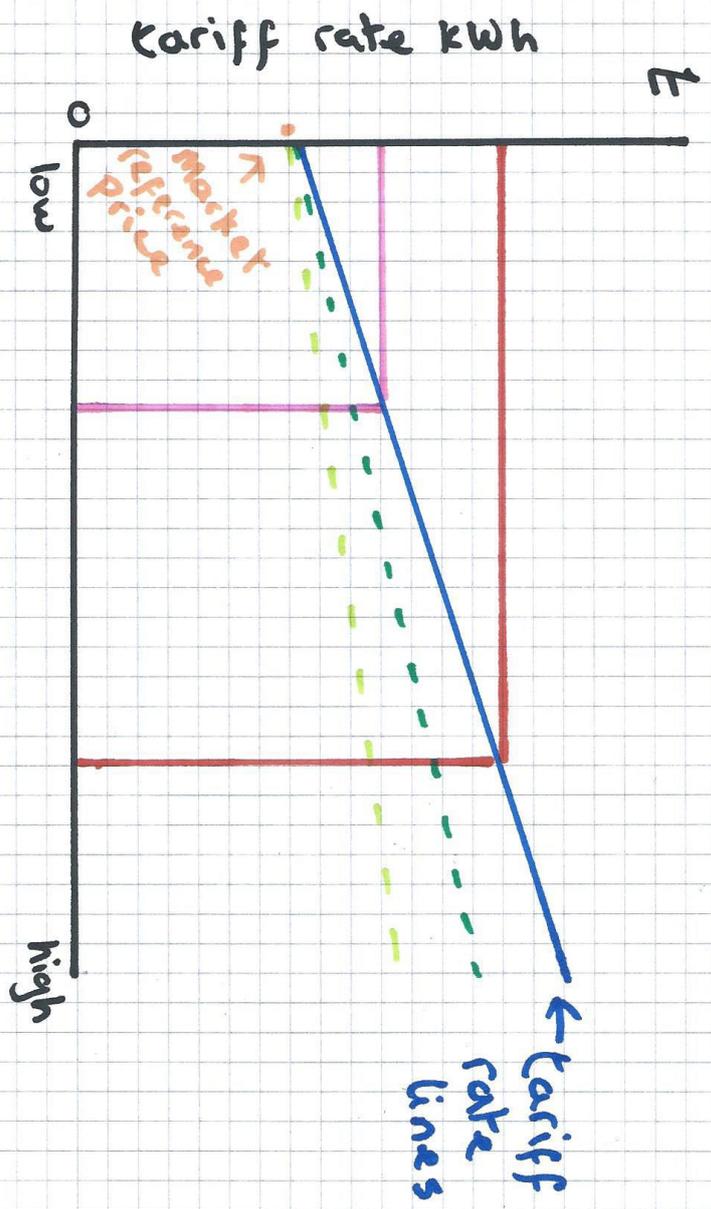
4. How the Mechanism works

There are three sorts of electricity unit that households consume. Their price varies according to the time of day and the method of generating them

- Tariff Units are full price. They apply from 07.00 to midnight. The more of these units that are consumed by a customer, the higher the tariff they have to pay over their whole bill.
- Economy 7 units are half the price of tariff units. They apply from midnight to 07.00. No matter how much electricity is consumed during this period, it will not affect the tariff.
- Green Surge units are quarter the price of tariff units. They also apply from midnight to 07.00, but only when there is an excess of variable renewable energy in the system, such as high tide or wind, that cannot readily be stored. Information about when they are available could be given during a regional weather forecast, or 'Smart' appliances remotely told to turn themselves on.

There will also need to be some sort of premium charged to customers to cover Social, Educational and Environmental schemes, previously administered by the Energy Companies.

Viv's Power Price Mechanism



The red kWh has a higher tariff than the pink kWh

(c) Viv Endecott 2017

The Mechanism (see diagram)

At the end of each charging period (probably still a Quarter) the desk will have purchased a certain amount of electricity, for which they will now have to allocate a charge to each of their consumers.

A computer algorithm will have to calculate how to split up the total bill for all the electricity consumed by each household during the charging period.

First of all, they will need to find the Market Reference Price, based on an average kWh from all of their suppliers during the charging period. (see *diagram orange dot*)

To set the tariff rate line, households will be distributed according to their consumption of tariff units within their property band. The tariff line will start at MRP and the slope positive. It will rise in steepness until all the conditions have been satisfied to cover the cost of the whole bill (see *diagram the green lines would be insufficient, but the blue line would cover the bill*).

Household bills can then be calculated depending on their individual tariff and their consumption of full price units, half price and quarter price units. (see *diagram pink and red*)

A bill will consist of

- (x) tariff units x tariff rate
- Plus (x) Economy 7 units x ½ tariff rate
- Plus (x) Green Surge units x ¼ tariff rate
- Plus % (depending on property band) for social, educational & environmental schemes.

5. Discussion

Whatever scheme is chosen, it will prove to be 'unfair' to someone. Those with the loudest voices are currently living! By seeking to increase consumption of renewable generation and reduce demand for fossil fuels by flexible pricing, this scheme works in favour of future generations.

Currently energy companies have to administer various schemes to help with social, educational and environmental schemes. We should not fool ourselves - these schemes have always been paid for by consumers and not by share-holders! I would suggest that the energy companies are no longer compelled to pay for these activities, but a Premium is levied on consumer bills by the new SO. Maybe Band A will pay nothing, Band B +1%, Band C +2%, Band D +4% etc, tweaked according to need. (Let's call it the *Social, Educational and Environmental - SEE fund*)

Social considerations

- All households are automatically entered into competition and will get a 'good' deal. It may not be the absolutely 'best' deal, which is only found by the most dedicated of Switchers.
- Pensioners' winter fuel allowance can be paid directly to the SO. It cannot then be spent on other things. Those pensioners who don't want this allowance may donate it to their local SEE fund for *neighbours in need*.

- By basing the competition on properties and not occupancy rate, the competition may disadvantage large families living in small homes, since their energy consumption will be at the 'high' level for that property band. This is partly mitigated by smaller properties having a cheaper 'Social, Education and Environmental' premium, so that even if the family lived in a bigger property their bill would be unlikely to be cheaper. (Not all taxes are *pro-rata*, including Council Tax). The purpose of this scheme is to promote competition in reducing demand by developing good habits, for the sake of global warming. (see below)
- People who are ill need warm homes and no worries. The SEE fund could make a grant to these people, but I would still want them to be mindful of their consumption pattern.
- I would want people on pre-payment meters to pay the same as someone with an account. During the quarter they could pay the Market Reference Price plus (say) 20%. At the end of the quarter, when their pattern of usage is calculated, any extra overpayment can be credited back to their card. Extra costs for administering PPM customers can be paid by the SEE fund.

Economic considerations

Here's a thought... a small charge on environmental grounds can lead to a big change in consumer behaviour. The 5p plastic bag charge has reduced consumption by about 75%.

The domestic demand for energy is about 25% of the total consumed.

Should *Viv's Power Pricing Mechanism* reduce domestic demand through competition between consumers by an additional 4% a year (over and above the DECC predicted reduction of 29% for electric by 2020) then this will be about 1% of national demand.

The Hinkley Point nuclear power station is set to supply 7% of national demand for £18 billion. Therefore *Viv's Power Pricing Mechanism* is worth £2.5 billion, and the same again in running costs!

Furthermore, compared to a nuclear station

- No deals with foreign governments
- No physical infrastructure or planning permission required
- Cheap and easy to implement since postcodes and council tax band data is readily available. SMART meter technology is ready to supply household consumption data.
- Consumers get a good deal every time without the hassle of switching supplier, which is particularly beneficial for poorer consumers, who are amongst the most loathe to switch.
- Fuel security will become more robust
- No cleaning up afterwards (also carbon and other emissions free).

Some Environmental Considerations

- Between 07.00 and midnight, the marginal cost of the last unit of power consumed will always be the most expensive. Therefore it is worth bothering to turn off unnecessary lights
- It will benefit households to invest in their own small scale renewable generation, since savings will accrue from the 'expensive' end of their bill.
- Climate Change projects such as insulating cold homes can continue under the SEE fund

- When I first thought about the Green Surge units, I was considering a family using a timer for their washing machine and dish washer. I was not thinking of everyone plugging in their electric car. Maybe these units will need to be rationed!

Role for Education

- The CS will be able to identify those households with very high consumption. Some will be “not bothered” and have deep pockets for big bills. Others, like the large family discussed above, may welcome help and maybe grants for energy efficiency, paid for from SEE fund.
- Constantly reminding people that “the last unit of energy you consume will be the most expensive” will require an on-going advertising campaign; done well it could be quite amusing. Adverts will also be needed to alert people to a Green Surge tide

Costs of implementation

If the 124 desks require 10 people each to operate 24/7, with the employment costs of each averaging £50k, then the wage bill is around £62 million. Maybe with the cost of staff running the SEE Fund this may rise to £100 million, which is just 5% of the £2 billion inefficient domestic overspend by consumers.

It should be remembered that many of these job functions (billing, metering) will be transferred to the National Grid from the energy companies, whilst the need for some functions (such as advertising and marketing) will be virtually abolished, so the savings will be considerably more.

6. Conclusion

A friend of mine who has ‘A’ level maths, a degree in economics and is a qualified chartered accountant confessed that he too finds energy deals confusing. When I realised that some companies were considering offering bundles that not only included dual-fuel, but also TV, phone and broadband I realised that nobody could pretend to understand what a good deal looked like. To quote a TV advert, energy customers do not feel “epic” having switched; rather they feel angry, exasperated, and have a nagging feeling that somehow they’ve still been ripped off.

What customers want is a Champion; a knight in shining armour who they can trust to cut through the crap and confusion to get them a good deal, every time. They do not trust the price comparison sites to be this champion because they, too, will demand their cut.

The Competition and Markets Authority said that not only have the energy companies confused their customers, but with their 10,000 pages of rules about commercial and policy areas, they are also able to run rings around their regulator. We have seen this before with the banks; once a financial product became too complex, a mere mortal was unable to understand it. My radical but simple system gives OFGEM a chance to start again with a clean sheet.

Theresa May has reminded us that the State should be a force for good. I believe that allowing the National Grid System Operator to work in the best interest of a local group of householders as the honest broker intermediary between them and their electricity suppliers, is an appropriate State intervention, with an outcome that is more efficient for most householders.

Who wants hassle? A case study

Webuyanycar.com have recognised that some customers are prepared to sacrifice getting the very best price for their old banger if it means having more quality time with friends and family. This principle has been totally overlooked by energy regulators who know that many consumers, by not switching, value a hassle free life at more than £200.

Peter Nadin is an obsessive switcher and has developed an impressive colour-coded spreadsheet to keep track of his consumption pattern and the deals available to him. However, given that his savings are in the low £ hundreds, I reckon that he is valuing his time at under £1/hour. In an interview with *The Sun* he said

"I get put on other tariffs sometimes. It's often when companies put the wrong values into their computer, but I still have argued with them to get them changed back.

"Then you have companies who threaten you with termination fees even though their policies state they don't have any.

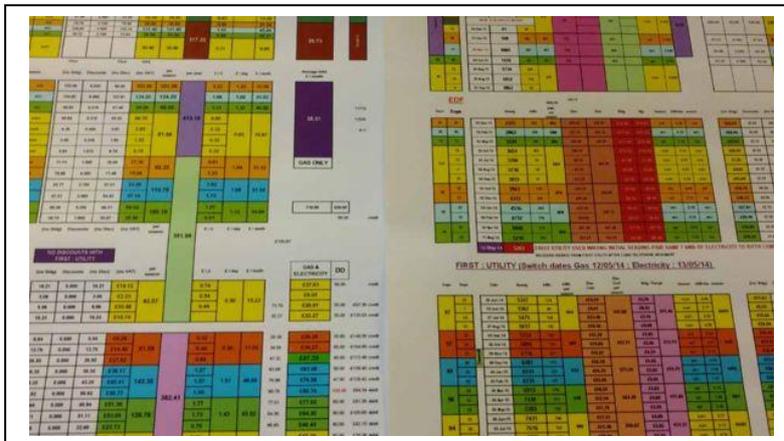
"You sometimes have to go through several people in the call centre before they realise they have got it wrong.

"It's amazing how many companies do not produce a final bill. The final bill is always wrong. They pocket the different tariff on the final bill. Then they agree they should not have done that.

"We are all being ripped off. It can all be very time consuming, but I don't like to be ripped off.

"The problem can be time. I can sit for hours on the phone, but other people just can't afford to do that. But I'd still advise people to switch. People are losing three or four hundred pounds a year by not switching. No one is treated fairly."

Here is Peter's spreadsheet

The image shows a complex spreadsheet with multiple pages visible. The data is organized into columns and rows, with various cells highlighted in different colors (yellow, green, red, blue, purple) to represent different categories or values. The spreadsheet appears to be a detailed comparison of energy tariffs, including columns for 'Tariff Name', 'Rate', 'Start Date', 'End Date', and 'Status'. There are also sections for 'Consumption' and 'Cost'. The overall layout is dense and technical, typical of a financial or utility analysis tool.