Luck is not an energy policy –
the cost of energy, the price cap and what to do about it

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The ramp-up of gas prices, the knock-on rise in wholesale electricity prices, and the consequences for those supply companies that failed to hedge forward to cover the six-month rolling price cap have all taken the Secretary of State and officials at the Department for Business, Energy and Industrial Strategy (BEIS) by surprise. They did not see it coming, and they should have. OFGEM has not properly regulated the supply companies, allowing licensed businesses to trade without due regard to the possibility that wholesale prices might rise, and therefore failing to do proper scrutiny of the companies' business plans.

Elsewhere the disconnection of some customers for more than a week as the result of a storm raises big questions about the behaviour of the distribution companies, and the price spikes in the balancing market have been pretty remarkable. No wonder there are inquiries into almost everything now in train.

The result is one hell of a mess, and most of it avoidable. The immediate problem is the collapsing supply companies – 25 so far – and one (Bulb) so big that it has in effect had to be temporarily nationalised. The Secretary of State told the Select Committee that a few suppliers exit the market every autumn, and that he was not going to bail out failed companies (for all the claims about customers being protected). Only the second has merit, and even here, we as customers rather than as taxpayers will pick up the bill for the customers who have been transferred to new suppliers and for Bulb's strategies. Estimates suggest anything from around £85 to £120 per customer.

If it were only a small number of these immediate problems, the situation would be bad, but at least partly retrievable as and when gas prices fall in the spring, as the Secretary of State seems to expect they will (and which may well happen). He may be lucky with both the gas prices and the weather (as he continually consults the Met Office to check) and this maybe allows the market to settle down a bit, later in 2022. But both the gas

price and the weather may turn out otherwise and luck can run out, and complacency plus "holding his nerve" hints at a complacency that will haunt BEIS for as long as it takes for the Secretary of State and the Department to recognise that something more fundamental needs to change. Putin has other ideas about Ukraine, and it might just turn out to be cold, grey and windless in both northern Europe and parts of the UK. Demand might go up, the wind might not blow and the sun might not shine.

In any case, luck will not solve the immediate price increases to come. The possible disaster that is around the bend next year is that the cost of energy is not going to come down any time soon, even if the gas price falls. The government has baked in a continuing set of price rises for several years to come. Many customers will not be able to pay, even if they are willing to do so, and they may not vote for politicians who are going to force them to pay. As the spring arrives, the combination of higher general inflation – especially in food prices – plus rising interest rates is going to reinforce a cost of living crisis, which in turn will be politically toxic and leave the poorer customers in dire straits. The "poor" in this case might stretch a long way up the income distribution, and especially in the PM's beloved northern constituencies.

Worse still, and perhaps even more serious, is the gap between, on the one hand, the government's cake-ism, the assumptions by the Committee on Climate Change (CCC) and the Treasury that net zero is not going to cost much, and, on the other, the reality that it probably will. In any event, there is a whole juggernaut of past subsidies that are coming onto the bills. In the *Cost of Energy Review* (2017),[1] I set out what these legacy costs might add up to, and pointed out the irony that, as the cost of renewables was falling, the price of renewables subsidies to customers was actually rising.

Since the *Cost of Energy Review*, the government has been making multiple spending commitments on net zero, on the behalf of customers. There are further rounds of contracts for differences (CfDs) that neglect the costs of intermittency. There are all the network costs to come, and new regulatory asset bases (RABs) on a pay-as-you-go basis for nuclear, and possibly carbon capture and storage (CCS) as well. To these, add the costs of the charging networks for electric vehicles (EVs), and the replacement of the

[1] Helm, D. (2017), "Cost of Energy Review", Independent Review for the Department of Business, Energy and Industrial Strategy, October. See, in particular, Figure 14: Impact of Policies on Household Energy Bills, p. 43.

household boilers, plus the costs of energy efficiency. No wonder there is already a yawning gap between the multiple targets the government keeps setting and what needs to be done practically to achieve them – as the CCC rightly points out. With just 13 years to go to the 2035 target, either the costs are going up sharply or the government is going to fail. The possibility that it will be both cannot be ruled out.

Both main political parties approach these costs with a frightening complacency and their own brands of "cake-ism". The PM and Ed Miliband share an enthusiasm for borrowing to pay for all this, rather than face current customers with yet higher bills. Ed Miliband explains that this is an investment to avoid the much higher costs he assumes climate change will impose upon us. It is an argument the Treasury and the CCC advance too.

Yet this too is a delusion. We are not paying to reduce territorial carbon production in the UK (the net zero target) in the sure knowledge that we will then avoid the costs of climate change. On the contrary, there is scant evidence that the world is going to crack climate change, and the Glasgow COP confirmed this dreadful prospect. Climate change will be largely solved, if it is, in China, India and Africa, not in a relatively small and now, post BREXIT, stand-alone country like the UK. The very real prospect of the cost of energy is that we will bear both the costs of the mitigation *and* the costs of climate change well over 2˚C.

None of this implies that we should not reduce our emissions, and by taking a carbon-consumption approach (our true carbon footprint) stop causing more climate change ourselves. But it is unlikely that we will thereby avoid the costs of the climate change. We are responsible for a lot of legacy carbon in the atmosphere, in addition to continuing to cause climate change, even if we meet the carbon production territorial target. Think of all those carbon imports.

Realism about bills

All of the above tells us that we have a short-term problem and a long-term problem, both of which require more than relying on luck. The *Cost of Energy Review* set out how to address both of these. It proposed that the legacy costs should be socialised; that the regulation of supply should focus on margins; that the cost of electricity should reflect the actual cost of generating the electricity (much of which has nothing to do with the

price of gas); a splitting-out of systems operators at the national and regional levels; and that there should be an Equivalent Firm Power market replacing the wholesale market. These, together, would have put the energy market on a sustainable basis and would avoid the lurching from crisis to crisis. As the government continues to ignore each and every one of these proposals, what it cannot avoid is the consequences of sitting on its hands.

Those consequences are gathering in dark clouds around the Secretary of State and BEIS. They may be about to get very dark. With Russian military action deep inside the eastern parts of Ukraine it has already occupied, the outlook already appears ominous for European gas supplies. Now is Putin's best chance to advance his long-held and explicit ambition to reverse some of the losses of territory from when the Soviet Union broke up. He is very transparent on his objectives. Nord Stream 2 is poised for connection, cutting out Ukraine. The new German government is divided about the pipeline (with the SPD historically very pro-Moscow, while the Green Party and FDP are sceptical). Then there are the consequences of BREXIT and what happens to the interconnectors we have become increasingly reliant on if there is a period of cold, grey and still high-pressure weather over northern Europe in January and February, and the EU's understandable preferential concern for EU members rather than BREXIT Britain. It is probably very wise for the Secretary of State to keep looking at the weather forecasts.

Even if the Secretary of State gets lucky (and he might), there is the February deadline for OFGEM to announce how far electricity bills are going up under the price cap in April. After the last rise of 12.5%, another similar hike will be beyond the capacity of many to absorb, and politically very difficult for the PM to stomach. When we get to February, the government may even start to regret it did not take the recommendations the *Cost of Energy Review* seriously and think through the reforms proposed. It will end up doing most of them piecemeal, but in response to crisis rather than creating a sustainable energy market for the net zero strategy, and in particular making sure that security of supply is maintained whilst decarbonising.

The immediate problems of the supply competition failures

There are so many vested interests lobbying for changes to the energy price cap. Most conveniently forget why it was put in place, and what went before it in terms of excess margins and anti-competitive behaviour. Many think that calling a market "competitive" makes something good per se, without thinking through the many ways in which particular markets work, and particularly badly flawed ones.

In all the current chaos, the original rationale for supply competition has been somewhat forgotten. The basic idea was that electricity (and gas) can be reduced to commodities and that competition to supply these commodities will result in the lowest prices. As a result there is no need for regulation; the market will regulate itself.

This is the theory which would have given us retail water competition, and rail competition. To make it work, there had to be many buyers (you and me) willing and able to switch at zero cost and frictionlessly between the many sellers. And, of course ,in the pure model no social obligations, no universal service obligations and no wider citizen considerations. And no net zero imperatives.

As it has turned out, the suppliers engaged in all the sorts of practices that might have been anticipated by those less captured by this deceptively simple model. The suppliers engaged in aggressive door-to-door sales. Many confused the buyers with complex deals, pretended that selling an homogeneous commodity could be product-differentiated, lobbied to make smart meters as their business and then promptly made sure that consumers could not switch between suppliers while remaining smart, engaged in green tariff greenwashing, and made offers to customers based upon their (the suppliers') short-term wholesale market purchases, sure in the knowledge that they could always fall back on their limited liability. Not surprisingly, some eye-watering margins resulted. Regulators failed to deal adequately with all these anti-competitive practices. The *Cost of Energy Review* offers calculations of these margins,[2] lists all the fines and interventions by OFGEM,[3] and explains why the earlier Retail Market Reform (RMR) was proposed. It is a dreadful history of a seriously flawed

[2] Helm (2017), Table 19: Domestic Supply EBIT Margins in Great Britain, p. 155.
[3] Helm (2017), Table 1: Current Policies and Interventions, p. 36.

market and some very poor behaviour. It is no wonder that we ended up with a price cap.

On the demand side, it escaped the notice of the competition enthusiasts that a further and fatal flaw in their model was that customers might not want to spend loads of time staring at computer screens to try to find the best deal, even if they could understand what was been offered, and that what they might actually want is just a reliable supply of energy, based upon a fair return. Most consumers simply did not engage with this shiny new model and remained "loyal" customers, despite the exhortations by ministers and regulators to switch. Their loyalty was exploited, and hence the introduction of a price cap.

The *Cost of Energy Review* documented just how fat some of these margins were, especially when "earned" on a cost pass-through of most of the costs, of distribution, generation and renewables subsidies. The business of a supplier, however fashionably dressed up as selling energy services, is pretty simple: primarily about billing, revenue collections and customer administration. Understandably, there was a political consensus behind introducing a cap: Labour proposed it, and the Conservatives implemented it.

The companies that complain the loudest about the cap fail to engage with these facts: that most people do not want to switch, and they conveniently forget the bad behaviours in the market before the cap was imposed. There is nothing wrong with customers wanting a price cap, defined over a period of time. It gives them minimum hassle, and they can organise their household budgets accordingly. Whilst financially sophisticated consumers might like spending all evening on the internet, most customers do not want to, and indeed not everyone has the understanding, digital skills and access to the internet to perform these market search activities. Competitive markets should deliver what customer actually want, not what they would like them to want.

In the pre-competition days, the electricity price was often set annually. There is no great benefit to repeatedly changing the numbers and no good reason to intervene more often than the current six months, as OFGEM is flirting with. But a fixed price cap over six months or a year does have a knock-on impact on the suppliers. For the suppliers to

offer these longer-term contracts, they themselves need to buy long, hedging their exposure to short-term volatility. In the past, this meant longer-term take-or-pay contracts for gas, and back-to-back contracts, which the Central Electricity Generating Board (CEGB) and the electricity Area Boards entered into.

It is very fashionable to think that frantic short-term trading is the most efficient way to run a market. It lured Northern Rock to move away from its stable and boring customer base to engage in the wholesale trading which brought it down. The analogy with energy is a close one: instead of contracting on the basis of boring loyal customers, the energy supply businesses found the spot wholesale market just too exciting, especially when the price was falling. The accident was waiting to happen, and it has – big time. 25 suppliers have already gone bust. They have reaped what they have sown. But it is us the customers and us the taxpayers who are in the end going to bear the inevitable costs.

It is a great mistake to think that we should go back to the status quo ex ante, and abolish the price cap. On the contrary, there are good arguments for doubling down upon it, and even extending its scope to shield switchers as well. It could even be annualised. The Secretary of State is right not to have buckled under the pressure so far to abandon the price cap. He should stick to his guns.

A price cap does not mean that companies cannot recover their costs. The network utilities have their prices fixed for five years in advance, and there are mechanisms to adjust, log up and cope with shocks. In setting the price caps on network utilities, the regulators not only take a view about future costs, but also about a reasonable rate of return.

In the case of suppliers, that is the margin. In the *Cost of Energy Review*, I recommended that it should be this margin that should be the regulatory focus, implemented through a default tariff, and this margin should be transparently published for all to see, just as the rates of return and costs of capital on utility networks are discoverable. So there would be a forward-looking price cap on bills, on an assumption about a reasonable margin, and then a rebasing at the point of revision.

The reply might be that energy markets for the commodities are much more volatile than the costs of utility networks and their maintenance. But again this is to look

backwards. The new electricity generating technologies are largely zero marginal costs. They have very little by way of variable costs. In this respect, they are like utilities: big ex ante capital expenditure (CAPEX) costs and then near-zero marginal costs. The costs of renewables are set through CfDs and other mechanisms. They are given, known and do not jump around. They are not themselves commodities. Nuclear shares these characteristics too.

The regulatory job is then to set the prices for supply alongside the prices for transmission and distribution on a forward-projection basis, and then to assess whether any supplier has the appropriate contractual structures in place to ensure that they can, in reasonable circumstances, discharge their licence requirements to deliver to their customers.

To this framework, there is one further objection, that, in the future, suppliers will not be selling electricity directly to customers, but rather energy services. The suppliers will own the boilers, the heat pumps and the car chargers, and will guarantee, say, a temperature in the house of 20˚C, hot water and the charging of the car.

Note two things about this energy services model. First, it is not new. Centrica, for example, has been trying it for years. Second, it is not incompatible with the price cap as discussed above. The energy service company, under the price cap, must not charge more per unit than the price cap dictates. Indeed, disguising the price cap in an energy services company runs the very real risk that some customers will have little incentive to minimise use and, by complicating and bundling services together, the customers may have even less idea of whether they are being fairly charged. The example so far of energy services companies offering services around smart meters and energy efficiency have not, and do not, undermine the case for a price cap. Nor do they induce much confidence.

Dealing with the underlying cost elements – the long-term challenges

The price cap should stay and indeed be built upon, not shortened or undermined as many companies and now OFGEM seem to be suggesting. But there is more at stake than the short-term price of energy. The long-term energy price should be a matter of considerable concern, and in particular the way in which the current market structures fail to reflect it and fail to drive efficient pricing. The price of energy, and electricity in

particular, is going up because the net zero plans are going to be costly. We should plan for a 21st century energy market structure, not carry on with a fossil-fuel-driven 20th century wholesale market framework.

The *Cost of Energy Review* set out how to do this.

The first step is to clear the decks from the past. This means taking the past costs of developing renewables, and especially offshore wind, off the customer bills, and socialising them onto the taxpayers. The reason for this is that the main element was R&D – the early stage deployment of what were then new technologies. These costs are public goods and should not be parcelled out onto customers' bills in relation to the volume of their demands.

To this argument in principle, there are also two pragmatic ones. The first is that, as the costs for renewables are falling, customers should see the impacts on lowering their bills. In a competitive market, price is not determined by what the previous generation of laptops and smartphones cost; it is determined by the latest technology vintage. So, too, with renewables. Otherwise we have the perverse result that bills go up as costs fall.

To this may be added the practical expedient in the current crisis situation that this would moderate the sheer scale of the bill increases that are to come in April 2022. Where consumers cannot pay, government will have to intervene anyway, so best to do it in a non-distorting way, which is to socialise the legacy costs of the early renewables, as per the *Cost of Energy Review*.

The second step is to make the price be based upon the actual costs, rather than the marginal cost of the last unit of gas-fired electricity generation. In the wholesale model of the 20th century, the system was dominated by coal, and hence by the marginal cost of coal. In 1990 the energy mix was roughly 75% coal and 20% nuclear. Now it is about 40% gas, 20% nuclear and the rest is made up of wind and solar. As we move towards net zero, the cost will be dominated by wind, with gas as a back-up. (Nuclear is set to decline for at least the next 15 years as the old plants retire.)

In the new world of renewables and possibly eventually more nuclear, most of the electricity generation will be zero marginal cost, immune from the vagaries of the fossil-

fuel markets. Gas will be needed as back-up to intermittency. It is therefore more like insurance – needed just in case. There should therefore be a strategic reserve, with a capacity charge, topped up with gas costs when used, but supported by appropriate storage.

The *Cost of Energy Review* set out the detail of how to design a market for this new decarbonising word. It is an Equivalent Firm Power (EFP) market, based upon capacity rather than energy, because electricity generation is becoming much more a capacity-based product.

The design of the market is against the reasonable assumptions about the cost structure of the future electricity generation and supply. Quite a lot of this is known: for example, the *Ten Point Plan* and the *Net Zero Strategy* include a massive expansion of offshore wind, and it makes sense to design a market around this, and to ensure that there is security of supply given its intermittency.

But there may and probably will be surprises. One of these may be hydrogen. The question is whether this is a wholesale, spot market, marginal cost-driven energy vector, or whether it is more like wind and solar, and more zero marginal cost-based. The answer depends upon how the hydrogen is made. If it is green hydrogen, it will be produced from renewables and nuclear, both of which have near-zero marginal costs. If it is made from gas, then the gas has marginal costs. But even here the main drivers for the hydrogen on the system are for storage, and the gas will need CCS. These are not marginal. And then there are the networks for its distribution, and again these have close to zero marginal cost.

In summary, the likely evolution of the electricity market over the next three decades is one that has a lot of near-zero marginal costs. A market designed around marginal costs is not likely to be appropriate, and it is one that will confront customers with volatile prices in the face of largely fixed and sunk costs. Carrying on with the 20th century market is not the answer to our decarbonising 21st century challenge.

The third step is to reflect the fixed and sunk costs in the setting of prices to the different customer classes. If the costs are fixed and sunk, and if the customers cannot escape the CfDs and the RABs, there are choices about who pays what share of them. There is no competitive switching possible for these predetermined system costs.

In the old CEGB days, there were major cross-subsidies, because, as a statutory monopoly, the CEBGB prices were equivalent to customer taxes. Now that almost all electricity generating projects are contracted by the state (the link to customers has been broken), there is an opportunity to combine an element of social justice in the decarbonising trajectory, by placing the fixed and sunk costs more on those who can afford to pay. The *Cost of Energy Review* recommended this.[4]

The fourth step is to recognise that, by having so many disguised subsidies showing up in customers' bills, there is an extra cost of not applying a proper carbon price. There are much cheaper ways of decarbonising than the path we are on, and the carbon price is a way of finding these multiple and cheaper routes, rather than concentrating all the burden on electricity for fear of the agricultural and transport lobbyists. Any decarbonisation pathway with differential carbon prices and key sectors left out is going to be more expensive than having a common carbon price as a core part of the strategy. Again, the *Cost of Energy Review* recommended this.

The absence of a common carbon price would not matter much if the costs of decarbonising are going to be as low as the CCC and the Treasury seem to think. But if they are wrong – and they are – it matters greatly that we really have homed in on the cheapest routes, and not simply done what is immediately politically expedient.

Conclusions – what to do now

My advice to every incoming government has been that they should fix the electricity and energy markets early on, because otherwise they will get bitten. Being forced into retrospective action is most likely to be more economically and politically painful. It was my advice to this government, and in assuming that all is for the best in the best possible energy and decarbonising system, they are now reaping the consequences. It is now crisis management and short-term expedients which will be needed. There is the further possibility of a serious energy security scare this winter, and a further bills crisis in April when the price cap is next revised.

[4] Helm (2017), recommendation 5, p. viii.

Once the complacency has been shattered, then perhaps the government might realise that relying on luck is not an energy policy. The spectacle of the Secretary of State having to keep checking the weather forecasts is not a pretty sight. It is now apparent that the electricity supply market is indeed well and truly broken, and that a strategy of "weathering the storm" is not enough. Whilst it is right not to bail out failing companies, and the gas price may and probably will eventually fall back, none of these bits of luck is going to plaster over the glaring inadequacy of the market design that lies underneath. There is still time in 2022 to do something about this, and to restructure the market design post COP26 and post the *Net Zero Strategy* to match the challenges not only of the next 30 years, but the next 13 years up to the 2035 target. That would indeed be a legacy that the Secretary of State could deliver on his watch. For what it is worth, the *Cost of Energy Review* set out how to go about it.

Net Zero: How we stop causing climate change

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