

Response to the Electricity Market Reform Consultation



Energy Policy Group, University of Exeter

Summary

1. We agree that electricity market reform is required in order to enable a shift to more sustainable energy systems, and enabling that shift to begin now is vital if we are to meet our longer term targets. Reforming markets is an expensive and risky process, and it is important to get it right rather than having to repeat the process in the future to rectify costly mistakes made now.
2. We do not consider the EMR a reform, if reform is taken to mean change aimed at improvement. If the EMR had been a reform, it would have placed the goal of reducing energy at its centre, as the cheapest and most effective way of delivering improved security, reduced carbon emissions and stable prices.
3. The government claims that the intention of the EMR is to encourage low carbon investment. However, it seems to us that the overarching aim of the EMR from the Government's perspective is to enable the building of new nuclear power, rather than the various other laudable objectives set out in the consultation. The Government obviously does not have the same priority for those wider objectives..
4. We do not agree that nuclear power is a necessary or appropriate part of the future energy system. We explain in detail below our views of each mechanism but in brief we argue that together the four mechanisms are designed to raise prices for electricity to such an extent that the Government will not be required to provide public subsidy for new nuclear power or to contravene European State Aid requirements. We are not averse per se to higher prices of energy but we do think that the costs of moving to a sustainable energy system [which are passed on to customers] should not be done so with a disregard to the fuel poor or when the risk and likelihood of failure of meeting the objectives of the policy is high, as it is the case here.
5. Our specific comments on the mechanisms can be summarised as:
 - a. The Carbon Price Support is unlikely to lead to non-nuclear investment and will cause leakage to Europe;
 - b. the Capacity Mechanism (CM) should be undertaken via a system operator and include the demand response;
 - c. the CfD FITs are an inappropriate means to support such diverse low carbon technologies; it is a misnomer to call it a FIT since the risk remains with the generator; establishing the strike price for nuclear power or CCS is unlikely to be 'right'.
 - d. the Emission Performance Standard is a belt and braces approach and we do not comment on it further

Together the proposed mechanisms lead to an extremely complex electricity market which must have a high chance of failure and unforeseen consequences. In addition, it will lock in investment in the current energy system configuration, rather than encouraging sustainable innovation.

Overall, we consider that the preferred options have such a high chance of failure or unforeseen consequences, that there are other cheaper and easier options and that the Government should think again.

Introduction and Context

We provide an overview of our assessment of the EMR proposals and then move on to answering a few of the specific questions raised in the consultation document. The Consultation puts forward an argument for why EMR is required and then puts forward four preferred options to enabling that reform – a carbon price support (CPS), a contract for difference feed-in-tariffs (CfD FITs); a capacity mechanism (CM) and an Emission performance Standard (EPS), which we do not comment on. We also consider omissions from the EMR process and the implications of the government's evident intention to drive investment in new nuclear power. Finally we conclude with a brief outline of an alternative approach intended to deliver investment in sustainable energy and focused on reducing demand.

1. The EMR is not a Reform

The EMR proposals reflect a continuation of the underlying philosophy within Government: that markets should be at the centre of the energy system; that those markets should be 'technology and fuel blind' meaning that there are no rules and incentives within them that support one technology more than another. A any support mechanism for a technology or fuel should occur outside the market and the generator is required to bid into the market in the same way as any other generating project.

Part of the complexity of EMR is caused by this preference to be market focused. Given the government's apparent intention to drive investment in new nuclear power, it would be much simpler to provide a purchasing power agreement (PPA) for nuclear power this would be unlikely to gain European State Aid approval and it would not meet the Secretary of State's commitment to no public subsidy. So instead the Government has chosen to maintain current market arrangements and to have external support mechanisms open for all low carbon generation, thereby not singling out nuclear. However, in order to put in place mechanisms which together create a market price high enough for nuclear power – four mechanisms have been chosen. Moreover, this mechanisms lead to a level of state involvement not since before privatisation in 1990. It would have been perfectly possible, as we argue below, to create more market orientated mechanisms although this would not achieve the government's desired nuclear investment

Thus, for Government to argue in support of the market and then put in place these sort of mechanisms is illogical, and we would argue the result of a political need rather than the outcome of evidence based policy analysis.

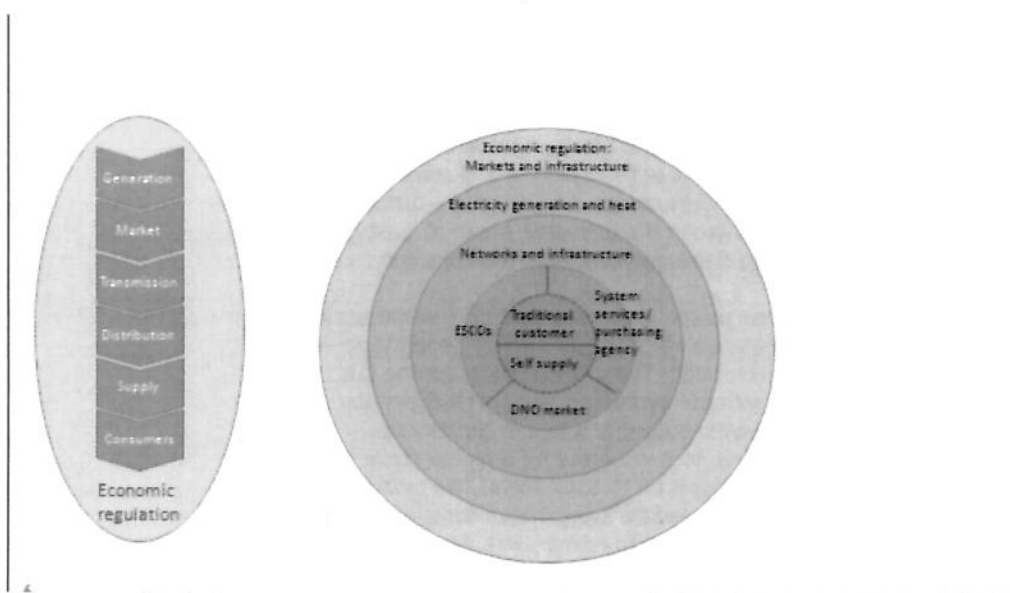
If the consultation was truly about reform, it would have placed the demand management at its centre and it would have ensured that energy service companies could access data for all potential businesses within the electricity system, thereby supporting both the demand side and new entrants and innovation. The EMR proposals are shaped by a 'traditional', supply focused approach to energy policy and planning, where the rules and incentives defined by the economic regulation of the system promote selling more energy, supporting the

incumbents and by default excluding new entrants. A more imaginative and radical approach focused on demand would place customers (of any size) at the centre of policy and planning rather than an afterthought. Customers could choose to self-generate or to buy from whomever they wish, while distribution and transmission companies can maximise their system efficiency.

Figure 1: Different views of the energy system

Traditional linear supply focus

Interlinked, demand focus



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2. Overview of proposed mechanisms

The EPG has been involved in several meetings about the EMR. It has been clear from these meetings that most all stakeholders (often for different reasons) are critical of the proposals in the consultation, except for those who are directly involved in building a nuclear power plant. The widespread perception is (rightly or wrongly) that the four measures put forward are knowingly intended to raise the price of electricity to a point where the government maintain the commitment by Chris Huhne, the energy and climate change secretary, to have no public subsidy of nuclear power and meet European State Aid rules while at the same time ensuring that arrangements are suitable for driving investment in new nuclear power. The details of the measures are complicated. Most will raise the price of electricity substantially, all have significant downsides, none seem likely to achieve their goal of delivering low carbon investment other than nuclear, and they have cheaper, less complex alternatives. From our perspective, this is an extremely regrettable position for Government to get themselves in.

2.1 Cfd FIT

The CFD-FIT will mean someone - almost certainly the government, perhaps outsourced to an agency - committing to pay a premium for low-carbon electricity, whether it be generated by a nuclear power plant, a demonstration coal plant with carbon capture and storage (CCS) or renewable energy. That one mechanism has been chosen to support such diverse sets of technology, all at different stages of development seems to us to be entirely wrong.

The cost of supporting nuclear power, RE and CCS will end up with energy consumers, via their utility bills. This is a great deal of money. It is vital that this mechanism works and in particular that money is not spent if it is locking one technology in for decades at a high price relative to alternatives over those coming decades - as can be expected for nuclear power and probably CCS.

For renewable energy, it should be relatively straightforward to hit the right strike price: there is a real market in renewable energy with a diversity of technologies and companies involved around the world. And because renewable energy comes in small units - turbines or solar panels, for example - even if the strike price is wrong the first year, it can at least be reduced rapidly or even cancelled thereby removing unwanted cost from the consumer.

However, it is a very different situation with nuclear power: there is almost no transparency of nuclear costs. The government can only negotiate with a couple of nuclear generators - since no others exist - so the information gap will be huge. The Cfd-FIT starts paying out with generation, meaning the construction risk is with the generator. Given that the other two nuclear power plants being built in Europe are over budget and late in construction, there must be serious concerns that the nuclear generators will press for a higher strike price which makes up for that construction risk and pass it on to consumers. The monolithic nature of a nuclear power plant - half a plant is no use - means tying British consumers in to that price for 30-40 years and gives them limited opportunity to refuse extra payments if costs rise without leaving large gap in supply. Support for CCS by CFD-FITs creates the same risks but with even less experience than nuclear power.

It should be noted that the move to Cfd FITs and the Government / Agency as the contract holder for certain types of technology removes a significant portion of generation from the 'market' and effectively shifts back to a level of state involvement last seen before the 1990 privatisation. This makes a mockery of the stated objective of markets being central to the energy future. As discussed below, there is a real danger that centralised contracting for renewable and low carbon energy, together with a targeted capacity mechanism, will squeeze out any "merchant" investment in the flexible conventional plant (CCGTs rather than OCGTs) that will be required in future

Auctions

One of the Exeter team has written extensively about the Non Fossil Fuel Obligation (NFFO), the first renewable energy support mechanism in the UK which was a tender¹. It is important to understand the difference between an auction or a tender. In certain

¹ Mitchell, C (2000), The England and Wales Non Fossil Fuel Obligation: History and Lessons, *Annual Review of Energy and the Environment*, 25: 285-312, Mitchell, C and Connor, P (2004) Renewable Energy Policy in the UK 1990 - 2003, *Energy Policy*, 32, 1935-47

situations, tenders via a system operator can be successful for a limited amount of capacity or for specific capacity. The 'classic' or fixed payment FIT where a pre-known price to be paid is posed; there is priority access to the grid, connection is agreed and all the generation is taken to the market reduces risk from the generators point of view. We support this for RE, with a depression (falling price component) included, rather than an auction.

2.2 The Capacity Mechanism

It is argued that the capacity mechanism (CM) is to compensate the owners of the 'middle capacity' of coal and gas power plants for providing the back-up supply that is vital for security of supply. Currently about 20% of the electricity system is low carbon but as that percentage increases, so the middle fossil-based generation is pushed to lower load factors and the generator's return on investment will become lower. That may be acceptable for current generation because their capital cost may have been paid off. However, to encourage new investment in a market which is knowingly going to shrink is more complex. The current generators argue that in this situation their potential return on new investment will become too low and/or risky to build new plants.

The Government's preferred option is a 'targeted' mechanism to encourage generation to be available at the 'peaks' or high points of demand – this is not for 'middle' capacity. The fossil generators say that such targeted support is not sufficient and want a 'general' capacity payment to cover their fixed costs for available plant, even if not generating.

We do not support a general capacity mechanism. This is an extremely expensive general payment for capacity to the benefit of fossil generation, which we are trying to get away from other than as a transition fuel to a sustainable future with variable power. Only in the context of a system need should a flexibility payment (as opposed to the much less helpful capacity payment) be made, and we would argue that this is better undertaken through a targeted mechanism. However, this should be part of a system operator function. It seems to us that with the RE Directive likely to increase; with a commitment to energy efficiency likely to become binding; and with quantities of available natural gas very uncertain at the moment but looking as if they are healthy, no such payment should be made. At the very least, a general flexibility payment shouldn't be made for the next decade or so if it becomes clear that it is necessary.

The National Grid Transmission Entry Register² indicates that 3.5 GW of RE (including onshore wind, offshore wind, biomass and woodchip) has received consent approval and 2.6GW is under construction. There is also 6.2GW of CCGT capacity with consent approval and 4.8GW under construction. The current National Grid Seven Year Statement (NGSYS) indicates that by 2016/2017 30.5GW of RE and CCGT capacity will be transmission connected. If demand-side measures were included within the EMR then this additional supply capacity would be sufficient negating the requirement of new nuclear build altogether.

2.3 Carbon Price Support

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(<http://www.nationalgrid.com/uk/Electricity/GettingConnected/ContractedGenerationInformation/TransmissionEntryCapacityRegister/>)

The carbon price support (CPS), commonly known as the carbon price floor, is intended to to £70 a tonne of carbon in 2030, and act as an incentive for investment in low-carbon power. If the carbon price via the existing European Union Emission Trading Scheme is lower than the CPS, companies must pay the difference to the government. All agree that reforming the EU-ETS itself, to create a stable European carbon price to drive investment, is the best way to go. We strongly urge the Government to follow that course.

Getting too far out of step with electricity prices in competitor countries by such extensive unilateral support of the carbon price will encourage 'leakage', meaning that companies will do all they can to avoid paying the UK carbon price by investing in generation in Europe or buying electricity from there, unless a border tax is put in place. The creation of a single electricity market will make the transfer of electricity production to Europe all the easier. Even worse, this will be followed by manufacturing jobs.. Thus UK customers could be paying heavily for a mechanism which is likely to not even achieve its stated goal of encouraging investment in the UK.

3. Omissions within the EMR Consultation

If the EMR were really about reform, then reducing energy demand and stimulating innovation would be at its centre, yet it is all but missing. The energy system has to be almost completely different from that in place today. Currently, about a third of our energy comes from electricity, one third from oil for transport and one third for heat. EMR must fit into the broader picture of decarbonisation of the whole energy system, not just the electricity system. It should be 'future-proofing' that energy system not increasing the risk of getting it wrong as it does.

The opportunity exists for companies to bid not to generate low-carbon electricity but to control the demand for energy thereby cutting the use of power, so-called negawatts. In electricity markets in the US, for example, 10% total demand is routinely removed at lower costs than supply. This is mentioned within the EMR consultation but only marginally. It is important that this is rectified and the demand response becomes the primary focus of the electricity market, as our figure shows. Supply becomes secondary.

Moreover, the institutional framework for how this complex interaction of mechanisms is going to work is also missing. For example, there is a complete lack of information on who is the co-contractor on CfD FITs, who then buys that electricity for consumption, will there be an agency and if so, what is the role between the agency and Government? How does this agency role overlap with the System Operator and economic regulator role? It seems to us that the way the consultation has been undertaken is the wrong way around. The consultation should be clearer about its objectives and then sorted out the tools to get there. The current consultation is more like choosing the tools without knowing what the outcome is.

There is also the question of whether the proposed long-term generation contracts are sailing against the wind of the European Union's forthcoming Single Electricity Market Directive rules, which imply a future of short-term power exchanges to maximise flexible and variable generation. The mechanisms that will deliver a single electricity market (by 2014) require that energy prices across Europe are "consistent" in nature and the CfD and Carbon Price support proposals set out in the EMR will act in entirely the opposite direction. That European binding requirements as these are but must surely raise questions about how

long the proposed reforms could last, thereby injecting a wholly unhelpful degree of political risk, an issue that is woefully underplayed in the consultation document.

Finally, EMR is technologically and operationally parochial. The ability to balance variable power via, for example, northern European or Swiss hydro is a real, economic possibility and yet we are moving against that. Similarly, the price of RE technologies is falling rapidly around the world. Whatever the UK may feel about RE because of the failures in the past of the Renewable Obligation they should be open to what is happening globally. It is a very real chance that we are tying ourselves in to nuclear when there is no need and when it is more expensive.

4. The Focus on Nuclear Power

The government's objective seems clear to us: to underpin investment in nuclear power. Much simpler ways of doing that exist, removing the need for the expensive assembly of CPS, CM and CfD-FIT. One would be a direct Power Purchase Agreement, but that is likely to fall foul of European rules on state aid.

Another option would be to tender for a nuclear power station's worth of electricity, about 2000 MW, via an agency to see whether a nuclear bid would be cheaper than an alternative combination, including renewables and demand-side measures. But again nuclear power would be unlikely to win that.

If the government wants nuclear power but cannot be seen to subsidise it at the national or European level, then we understand why it has put forward these convoluted measures. However, we see the approach as a failure of Government leadership and evidence-based policy analysis.

Nuclear power currently provides about 18% amount of UK electricity. Even if this were doubled with the new build programme it is still only a small proportion of UK energy use – Nuclear power is a fundamentally inflexible technology – its flexibility can increase to a degree but at an economic cost and with higher safety concerns. Increasing amounts of RE, as required by the RE Directive and for wider decarbonisation requires other plants to be flexible. Nuclear power, in theory, can provide some of the low carbon electricity required. However, it is at a cost to flexibility on the system which will undermine RE, which has to be the main provider of low carbon generation.

Similarly, the other main way forward, again likely to be binding from Europe, is to reduce our demand. In terms of direct consumption via buildings, this energy efficiency is a one-off payment. Within markets, the demand response can be an equal part of the bidding process.

It makes far more sense, given the need to decarbonise and have a flexible system to at this stage, given the technologies available, to move to a RE and EE future with natural gas as the transition technology. As variable power increases, so the NG plants load factor reduces but they are still available as the balancing generation. While NG is fossil, its use will be lower because of low load factors and this in turn reduces the security concerns, which anyway are reducing because of increasing availability of liquefied natural gas (LNG). All work together unlike nuclear which undermines RE and which cannot be a transition fuel nor can be the key technology.

The recent sad events in Japan strengthen this argument. The nuclear power plants in Japan are meant to withstand earthquakes through their safety systems. The UK should not be gaining comfort that we are unlikely to have earthquakes and tsunamis. Rather the Government should be thinking that the safety procedures of the Japanese nuclear plants failed and that this could happen at any nuclear power plant, including those in the UK. The situation in Japan is also highlighting the system and security consequences of losing large portions of power with no warning, whether this is through natural events or the emergence of generic design faults.

That the government wants nuclear power so badly given all these unwanted outcomes and given nuclear can, at best, only provide a small proportion of the low-carbon energy needed remains an enigma to any rational person. That enigma will trouble those paying the unnecessarily higher price of electricity, not least the increasing numbers of fuel poor.

5. Our preferred option

The Energy Policy Group considers that energy policy needs a fundamentally new approach in order to deliver sustainable electricity system, and that the proposals set out in the consultation document are inadequate. A more effective approach would be constructed around customers and reducing energy demand as a first step. Customers should be able to provide their energy (heat or power) and / or buy from whoever they wish, including real time pricing directly from a generator or energy service company (ESCO).

Government should ensure energy industry restructuring (including the retail market) and economic regulatory reform to ensure a vibrant energy service culture. They should also ensure that distribution network operators (DNOs) can become market facilitators, thereby enabling locational and time of day efficiency benefits. The interface between DNOs and the transmission operator should be grid supply points (GSP); the transmission operator should have no requirements within the distribution networks.

The electricity market should be reformed to have a single cash out price, to improve transparency which enables new entrants and smaller companies to access the market more easily. Low carbon should have priority access via a marginal carbon price via a system operator function. There is a classic or fixed price FIT for RE which includes priority access, injection into the grid, ability to connect at a pre-known charge. Additional required peaking capacity should be bought via the system operator but should also be related to flexibility. A flexibility payment for 'middle' generation should have an eye kept on it. The carbon price should be reformed through the EU-ETS. There should not be a unilateral carbon price floor.