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BEIS/Ofgem - Smart, Flexible Energy System - A call for evidence

**Submission from Catherine Mitchell, Richard Hoggett and Bridget Woodman
Energy Policy Group, University of Exeter**

1. Introduction

The Energy Policy Group (EPG) of the University of Exeter is very pleased to input to the BEIS / Ofgem Call for Evidence (CfE) on a Smart, Flexible Energy System. The EPG undertakes many research projects related to innovation and governance within energy systems to increase flexibility and smartness¹. We have had one particular project called Innovation and Governance for a Secure and Sustainable Economy (IGov, 2012-2016). This has now been extended to become Innovation and Governance for Future Energy Systems (IGov2, 2016-2019). Much of our arguments below have come out of the IGov work.

The CfE paper itself is thorough and its goals of delivering a smart, flexible energy system are welcome. We agree that technological change within energy systems around the world is happening very fast (for multiple reasons) and is opening up the possibilities of many new ways of operating energy systems and business models for the benefit of society and consumers. However, we argue that the institutional structure of the current GB energy system cannot enable an efficient transformation to a flexible, smart energy system as called for in the CfE. The GB institutional structure needs to move from its linear, top down supply format to one where any actor can buy and sell services of all sorts from any other actor, as shown in Figure 1. The reasons why this is necessary and suggestions for the necessary institutional change in GB to allow this to happen is set out in detail elsewhere², and we precis those arguments briefly below.

We are in agreement with much of the discussion put forward in the CfE. Our solutions tend to be at the more demanding end of options that are suggested in the CfE – although we would argue that they are not particularly radical options given that they already exist elsewhere in the world. We

¹ For example, we are a partner within a project developing a local market in Cornwall

<https://www.centrica.com/news/centrica-build-pioneering-local-energy-market-cornwall-0>

² <http://projects.exeter.ac.uk/igov/wp-content/uploads/2016/11/Final-Framework-Paper.pdf>

agree with these options because we would argue that to not implement them would be to choose options which try to improve the situation within the current linear structure. Because of this they are doomed to failure and would be yet another classic GB 'fudge'.

The energy situation is so different now from even a few years ago that a new institutional structure is required which does not just cope with greater decentralisation, more flexibility, more data, more customer involvement, more smartness and more energy efficiency and demand side response but positively embraces and values it. We would argue that if BEIS and Ofgem genuinely want this – as the CfE says it does – then they should follow our arguments set out in this response.

Energy is a long lived industry – and that which GB has in place is a structure linked to technologies and business models which are not those being chosen by the new entrants or new investors. As a country, our public policy and regulation has to bridge that gap between the 'old' and the 'new' in order that it is fit for purpose. Where a country falls in terms of the balance of support it gives to the 'old' or 'new' system reflects its attitude to Innovation (Section 6 of the CfE). GB has continued to support the 'old' system whilst saying it wants the 'new' system. The reality is that if 'value' (both real and de facto via the existence of barriers etc to the 'new' etc) is given more to the 'old' system than the 'new', then the 'old' will continue. It is very useful that BEIS and Ofgem have put out this CfE – calling for evidence about barriers and solutions to enable a smart and flexible energy system. But endeavouring to provide 'value' in monetary terms for a smart and flexible system must be undermined if it continues to do so in an institutional framework which essentially suits the 'old' system. The basis of much of the discussion for recommendations within the CfE does de facto assume no changes within the current institutional setting, even if there is a section at the end (5) which does raise the possibility of more fundamental change.

This CfE is a very useful step in opening up a debate about the transformation of the GB energy system, and how to move forward quickly enough to best meet the goals of GB energy policy – whether environmental, affordability, security or cost-effectiveness. Moving too slowly, as is currently the case, will be costly to GB society in all these ways. It is understandable that those with assets in the 'old' system would prefer that their economic interests are not unduly affected by change. However, we would argue that the GB energy system should suit the public interest foremost. GB is lucky that the fundamental changes in the energy system – cheaper decarbonising technologies, flexibility, smartness – all suit GB energy goals. Moreover, other countries are grappling with the same issues – and much can (and should) be learnt from them – as the CfE says.

2. Layout of Evidence

This evidence is set out in the following way. The next section (Section 3) discusses the CfE characterisation of customer involvement, and why we take a different view. Section 4 briefly expands on why institutional change is necessary, and why implementing many of the changes laid out in the CfE will be unsuccessful if they are not accompanied by those institutional changes. The IGov project has written extensively on this and links are given to enable access to more detail. Section 5 then goes through the multiple questions in the CfE, and Section 6 concludes.

3. A System for the Consumer

Whilst the CfE highlights a range of important opportunities and barriers in relation to ‘consumers’ we suggest that it takes a very narrow view about who consumers are and what they may be able, or willing, to do³. Within the CfE there is also an over-reliance on technical solutions to creating a smart energy system, which are only one part of the changes that are required. Insights from our research within IGov suggest a more comprehensive approach is needed, that:

- Puts people are the heart of the energy system
- Recognises that people are not just consumers and they can engage in multiple ways
- Seeks ways to gain meaningful consent to build engagement and trust

Putting People at the Heart of the Energy System

In the IGov framework for institutional reform⁴ we argued that people have to be placed at the centre of the system. Decisions on how the system develops should flow from this basic principle, through markets, decisions at the distribution and transmissions levels and through regulation and policy making. This is fundamentally different from the current view of people as simply consumers of energy and it recognises that energy systems are moving much closer to the demand side and that new opportunities to engage and take back control are rapidly emerging. Ultimately we suggest that the energy system should be designed and run in such a way that it fulfils people wishes.

There are already examples in other countries of putting people into the centre of thinking as energy systems start to become more decentralised in terms of geographic location, ownership status and operation profiles which are all influencing how customers use, produce and value services. Within New York and Australian for example, there is a shift towards thinking about the design and operation of the system based on what customers will value as the system changes and how the system will in turn value their involvement.

Linked to starting with people, we think there is also a growing case for optimising the energy system from the bottom up⁵. It is based on a much more granular approach to energy thinking – it’s about the type of houses we live in; where they are in the country; the places we work, shop, and relax; the local renewable resources; the local networks; and the wider infrastructure that exists in terms of heat, power and transport. It is only at this more local level that we can really know what the best solution might be in terms of demand reduction, demand side response, distributed energy, storage, heat production, EVs, biomethane, power to gas, etc. By optimising from the bottom up from the house, to the street, to the neighbourhood, to the town/city, county, region, it becomes more straightforward to create a smarter, flexible and integrated whole system that puts people first. This also aligns with the growing need to take an integrated whole systems approach that looks across vectors, in recognition that it then becomes easier to identify the best technical, economic and social options for an area.

³ <http://projects.exeter.ac.uk/igov/new-thinking-the-changing-role-of-consumers-in-the-energy-system/>

⁴ <http://projects.exeter.ac.uk/igov/wp-content/uploads/2016/11/Final-Framework-Paper.pdf>

⁵ <http://projects.exeter.ac.uk/igov/new-thinking-optimising-the-energy-system-from-the-bottom-up/>

Recognising the multiple and changing roles of people within the energy system

The continued framing of people as consumers within energy systems misses the wider roles that they also play as citizens, customers, voters, etc. The distinction is important as ‘consumer’ continues to imply and reinforce the view of people as passive takers of energy, with little role or opportunity to engage with the system as it changes.

A more nuanced approach is needed that considers the role of people within the energy system in respect to their ability and/or willingness to engage. Such an approach is being adopted in Australia⁶ and New York⁷ and it recognises that there is value in moving towards an approach that recognises how active, or not, they become – i.e. empowered, engaged or essential. Each segment is further broken down e.g. the Engaged segment splits into active (hands on) and passive (be my agent) – Figure 1 shows the range of segmentations and more detail on each segment is available here⁸.

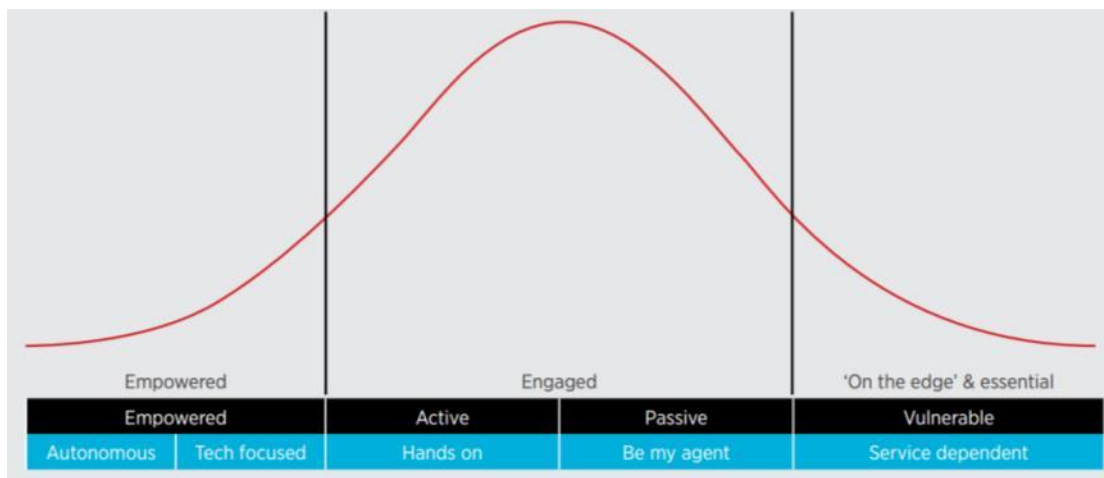


Figure 1: Example market segmentation curve for residential customers in 2025⁹

The above thinking is focussed on the electricity system within Australia. By starting from the point that considers end users in terms of their level of engagement with the use (and maybe supply) of electricity the options for working with them across demand reduction, DSR, Storage, ULEVs, etc becomes more obvious. Furthermore, people and businesses that Empowered or Engaged in terms of electricity could also be more willing to consider action across heat and transport. Equally, by identifying those people and businesses that are vulnerable or service dependent it becomes easier to target suitable interventions to protect and support them. It should be recognised that the end users are likely to move between these different segments as their circumstances change. As the CfE rightly points out it will become increasingly important to make sure that the developments within the energy system do not discriminate or penalise those that are unable to adopt new technologies or approaches.

⁶ http://www.energynetworks.com.au/sites/default/files/roadmap_interim_report_final.pdf

⁷ https://www.energymarketers.com/Documents/NY_REV_Track_2_paper.pdf

⁸ http://www.energynetworks.com.au/sites/default/files/roadmap_interim_report_final.pdf

⁹ Source: [Electricity Network Transformation Roadmap Interim Program Report](#) p33

Consent, Engagement and Trust

A further important point that is not discussed in detail within the CfE beyond one question within the DSR section, relates to how people are engaged and informed about the energy system. This is multifaceted: covering issues of consent, engagement and trust. We would argue that there is a growing need to engage people about the energy system so that they understand what is happening and why, how much it might cost etc. This is in part to get their consent, but also to help create transparency, openness and trust for some of the changes that could occur within their homes, workplaces, communities, neighbourhoods, etc.

The Centre for Sustainable Energy¹⁰ have done some important work on the need to gain 'meaningful public consent' given that: people will pay for some of the costs of transforming the energy system through their bills; will have to accept change within their communities and landscapes; and have to be willing to act e.g. such as through behaviour change, investment decisions and through giving permission for data sharing.

As the consultation points out, many of the changes in the shift to a smarter energy system, will require 'consumer' confidence to take up new measures and consent for how they could be used to help the system. This further points to the urgent need to start creating a dialogue with people about the energy system and their current and future role within it. Again, this is an area that they have been considering in some detail within Australia¹¹, where they have discussed how incumbent energy actors have eroded their 'social licence' with customers. They suggest that an approach that can rebuild this would be based on companies seeking legitimacy (e.g. to operate) in order to gain credibility (e.g. to provide reliable information and honour commitments) and ultimately regain trust (e.g. by building common or shared experiences).

Conclusion

We argue that all three of these issues (putting people at the centre, working with them based on their engagement, and seeking ways to increase that engagement) have to be addressed in order to create a low carbon, secure, affordable (and equitable) energy system. This requires a slight stepping back in thinking from the CfE to ask what the energy system is for, who it is there to serve and how can it best do that, rather than just focussing on in on specific opportunities and barriers like smart appliances and ULEVs, etc. This will become increasingly important as the energy system continues to change and is not just about technical solutions, but the wider governance framework within which they sit, and people's role within these. We would argue the work that BEIS and Ofgem are doing (as well as the NIC) in this area would also be considerably strengthened by seeking ways to develop an effective dialogue with people and businesses on the changing energy system and how to build on these to create meaningful consent. We believe this will be central to creating a smart flexibility system and vital for developing a whole system approach that brings in wider options for transport and heat, which could be considerably more disruptive in terms of the level of change required. Such an approach is likely to result in a much more comprehensive and targeted approach to policy and regulation.

¹⁰ <https://www.cse.org.uk/news/view/1839>

¹¹ http://www.energynetworks.com.au/sites/default/files/roadmap_interim_report_final.pdf

4. The Importance of Institutional Change

IGov has argued for various changes in response to different drivers, not least as described in the section above that GB needs to be clearer about what the energy system is for; who it is there to serve; and how. We believe the outcome of such a discussion would lead to altered relationships between all energy institutions, including between Government, Ofgem and the System Operator (SO); altered roles and hierarchy between Ofgem and an integrated and independent system operators (IISO); a new body which attempts to bring intellectual coherence, legitimacy and consensus to UK / GB energy policy decision-making; getting rid of code bodies, and their self-regulation; creating new bodies (data body and market monitors) which are either stand alone or part of another institution; transforming distribution network operators (DNOs) into distribution service providers (DSPs); altering the basis of network regulation from primarily cost plus (which includes a small amount of performance based regulation (PBR) to one with a much higher value of PBR directly related to outputs and value from transactions; the creation of more physical markets and platforms; a changing focus of service on customers and an efficient demand side (as discussed above); and new operational models giving precedent to bottom-up optimisation rather than the current top down. The IGov framework paper provides links to all these areas, if more detail is required¹².

This section focuses on one area of this – particularly important to the enablement of flexibility and a smart system – that of distribution service providers. Enabling a flexible and smart energy system is not just about alterations to monetary value via markets or incentives but also about freeing up the way that value is able to be accrued. The CfE describes the move from DNOs to distribution system operators (DSOs), and the specific questions around this are addressed below. We broadly argue that a DSO (assumed to have a separate wires company from the operator, and where value is given to system capabilities rather than both energy and system capabilities) is not the right way to go.

There are a number of alternative models to the DSO approach. At this stage IGov has taken the view that the distribution service provider – modelled on the distribution system provider model of New York State¹³ - is the one which seems to us to most to meet the transformation challenges of the current energy system – although we are open to different models. New York is putting in place a new regulatory environment in response to wider discussions about what the role of the energy system for society and economy¹⁴. We do not support the wholesale transfer of the NY regulatory basis to GB but we do think it's arguments are theoretically transformational because it provides a market means to encourage and value new services in a flexible manner, thereby being complementary to the current uncertain and changing energy environment.

¹² <http://projects.exeter.ac.uk/igov/wp-content/uploads/2016/11/Final-Framework-Paper.pdf>

¹³ The different acronym distribution service model versus distribution system model is confusing. We have adopted DSP meaning distribution service model because that is what actually is intended to happen in New York State. Services, whether energy or system, supply or demand, can be valued. We have opted therefore for a DSP = distribution service provider rather than the NY Distribution System Provider.

¹⁴ <http://projects.exeter.ac.uk/igov/new-thinking-transformational-regulation-comparing-the-ny-rev-riio/>

We argue that institutional reform in GB to enable a DSP- like institution is a vital ingredient for a flexible, efficient and smart energy system¹⁵. This is because operationalising a flexible and smart system needs granular, local, operational coordination with an understanding of value of services / resources at different places and times which can be enabled, accessed and settled. Heat is local; demand side response (DSR) is of multiple scales but small scale and local resource is currently not being tapped because its local value is absent; improving energy efficiency of our energy use, and altering our relationships with energy depends on consumer connection – and this can only occur through local means of everyday behaviour, as discussed in the section above. Managing variable supply of different scales also has different values throughout the system. If one is trying to have an energy efficient system then bottom-up optimisation of demand is the logical first step – and again coordination is necessary¹⁶. A DSP is needed to coordinate the supply and demand of services at the distribution level via its own physical market and linked platforms; provide value through enabling markets and contracts (eg for storage); and via its own regulatory incentives.

The DSP is regulated in a fundamentally different way from DNOs and DSOs. This is its main difference and is a move from rate of return, albeit with a small amount of performance based regulation to one which has a far higher proportion of PBR within its revenue and where it is incentivised through transactions (via platform market or direct contracts) which occur within the distribution network. PBR can be used to help fulfil Government policies (ie its PBR is linked to increasing renewable energy, greater energy efficiency etc) – thereby having more joined up thinking between governance. In theory, this means that DSPs are incentivised to be active and to deliver desired outputs, whilst meeting customer wishes. Customers can have the choice to link with DSP markets and platforms within the distribution network or to link to physical or platform wholesale markets linked to the transmission network.

The point is a coordinating distribution institution, such as the DSP, is the central requirement for enabling the valuing of the different services (such as flexibility) needed alongside the changing technologies (ie wind and solar) and their changing scales and characteristics. If this coordination does not occur at the distribution level then the decentralised granular value – of, for example, different flexibility options such as storage at one time and place - is missed and subsumed within ‘other’ less granular service values of the top-down optimised, supply orientated linear system, as occurs now.

The DSP is just one part of the GB institutional framework which needs an overhaul for the new system. Our GB decision-making – whether Government or Regulator or SO – has to become more transparent, as well as quicker; our Codes have got to become fit-for purpose; we need mechanisms to safeguard our security concerns with Data; we need a monitor to understand when market abuse is occurring and so on. Energy is a whole system and implementing DSPs without any other change will necessarily not be optimal. Nevertheless, when discussing the needs of a flexible, smart system – we argue that while some improved values for flexibility and smartness can be provided within the current institutional framework without a coordinating distribution body much of that granular flexibility and smartness value will be missed.

¹⁵ See Catherine Mitchell Local Energy Markets presentation <http://projects.exeter.ac.uk/igov/category/events/igov-events/energy-governance/>

¹⁶ <http://projects.exeter.ac.uk/igov/new-thinking-optimising-the-energy-system-from-the-bottom-up/>

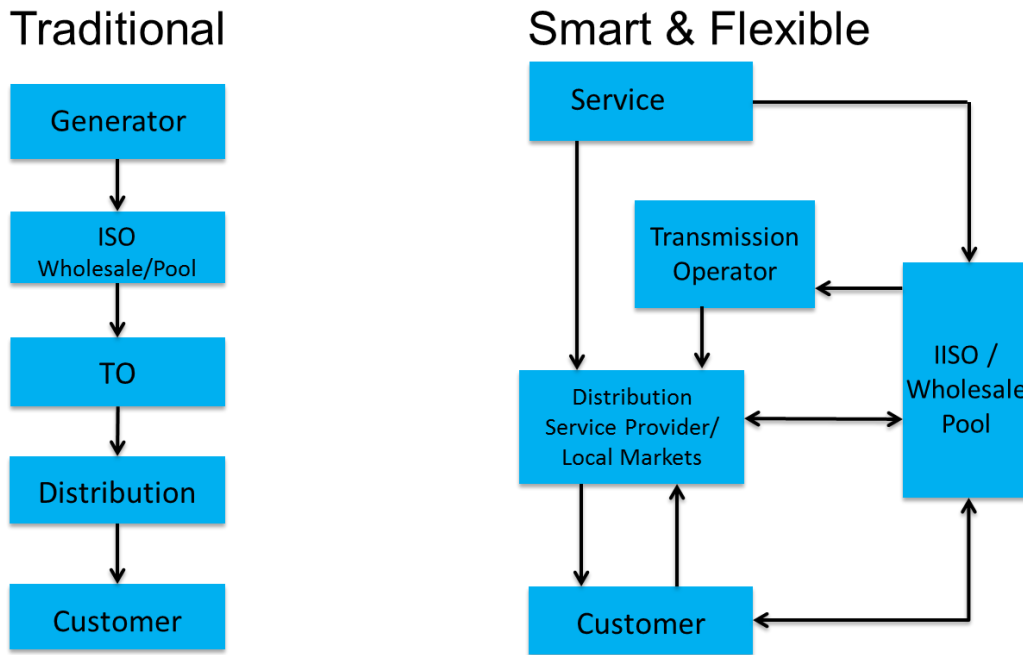


Figure 2 System Organisation for a Smart and Flexible Energy System

5. Answering the CfE Questions

Removing policy and regulatory barriers, Section 2, Questions 1-6, page 37

In general, as argued in the section above, we think that storage as a resource can only be properly valued if we moved to a new institutional framework with the system organisation, as broadly set out in Figure 2 above.

Yes, we think that network owners should have incentives to use the resources available to them efficiently – and this includes storage.

Saying that network companies should use storage (para 25) however seems to us to be too directive, and in this changing world open to problems of inflexibility. In general, the point is that a DSP should be incentivised to fulfil customer service wishes and run the system in the most cost effective way whilst meeting certain desired outputs. Their regulatory basis – some rate of return, PBR and transactions – means that they should be running the system to meet the desired outputs whilst encouraging new entrants and markets. This is more likely to include a contract for another company to input the storage at the appropriate place than them. However, the desired outputs can change – thereby enabling flexibility to the changing energy environment.

We do not think that RIIO provides sufficient incentives for the move to a smart and flexible energy system^{17 18}.

¹⁷ <http://projects.exeter.ac.uk/igov/new-thinking-transformational-regulation-comparing-the-ny-rev-riio/>

¹⁸ <http://projects.exeter.ac.uk/igov/working-paper-energy-networks-and-distributed-energy-resources-in-great-britain/>

We do think that storage should be defined in primary legislation as a new activity (your approach d. in para 38).

Clarifying the role of aggregators, questions 7-10, page 45

We do not support monitoring or industry led change as set out in Table 5, page 44. This section 2 of the CfE is written to reflect the traditional institutional mind set. As argued in our Section 3 above, we think the way the system is managed should be customer focused and bottom-up optimised. This means that aggregators – or intermediaries – should play a bigger role in providing services that customers or network companies and so on want – whether at the distribution or transmission level. We think aggregators should be licensed but this must not be an expensive or complicated process, since many of those aggregators will be very small companies. Whilst the resource they provide may be small, when aggregated together than can become a new and important force within the system.

We understand and accept the difference between aggregators and suppliers. In general, we support the view that someone with a resource can sell to whoever / whatever they want and that someone who wants a resource can buy from whom/whatever they want.

We argue in the IGov Framework to replace self-authored regulation through Code bodies with a system of Codes governance through an independent integrated system operator (IISO). It is self-regulation which makes the Codes so important, rather than the other way around. This is because it gives the conventional incumbent industry power to stop change. If Codes were taken into the IISO and altered in the normal ‘European’ way¹⁹ then the process of aggregator companies becoming licensed and involved in the energy system would be much simpler, as well as cheaper.

Providing Price Signals for Flexibility, questions 11-14, page 48

As set out above, we do not think the current institutional arrangements enable appropriate system value pricing. We think in order to reveal prices at a sufficiently granular level there needs to be more local markets, coordinated through DSPs. Contracts for flexibility are available at the transmission level, which are welcome but the GB capacity market is unhelpful because of its focus on supply; the extent to which it is fossil dominated; the way it locks in certain behaviours going into the future; and because of the absence of meaningful value for other useful capabilities. It would be very helpful if it could be thoroughly rethought within the debate on how to implement flexibility and smartness. A set of well-functioning DSPs should negate the need for a capacity market.

Finally, we argue for an integrated and independent system operator which is responsible for system security and meeting the CCC carbon budgets. The outcome of this should be a quicker move to a sustainable, secure and affordable energy system. This implies a more directed development of system infrastructure, new roles for Government, Ofgem and the IISO; new relationships between Ofgem, the IISO and the DSPs; and new regulatory arrangements as set out in the IGov framework. It also implies a more rapid revealing of value for flexibility.

Smart tariffs, questions 15-18, page 52

Yes, we support half hourly (or shorter) settlement. This would make the economics of the energy system much clearer.

¹⁹ <http://projects.exeter.ac.uk/igov/paper-innovation-and-the-governance-of-energy-industry-codes/>

Tariffs are not the fundamental problem in our view. It is the way that customers are thought of that is the greater problem (see Section 3 above). If customers were treated differently, and not thought of only as economic actors then the energy system would alter to meet their wishes and needs.

Smart Distribution Tariffs, questions 19-24, page 55.

Distribution networks have the potential to change enormously, and very rapidly, depending on pathways taken. There will have to be fundamental changes to distribution tariffs but these must be in line with a flexible and smart energy system which is customer focussed. The New York model clearly states that coordination via DSPS is a 'sensible' way to minimise infrastructure costs whilst ensuring a flexible means of enabling adequate network capability without also inflexibly implementing development which turns out to be not needed. We think this would be most cost-effective in terms of infrastructure costs; allows co-ordination of development so that total energy used can be minimised and used most efficiently; allows flexibility to a changing technological environment; and is focused on meeting the needs / wishes of customers.

What is clear is that the current way of undertaking distribution price control reviews, and their implementation, has been very unsuccessful and way too inflexible in this time of rapid technological change. Whilst Government and Ofgem say they do not want to be directive about the development of the energy system or act as a barrier to its development – this is exactly what it is happening. Such inflexibility fundamentally results from the means of decision-making in the traditional top-down, supply focused, linear energy system with institutions which are simply not able to fully function in a world which is decentralising and non-linear.

Other Government policies, questions 25-27, page 58

The IGov project has written a great deal about the capacity market^{20 21 22 23} and its wasted opportunity. Implementing the capacity market in GB, as occurred, is a good example of non-joined-up thinking. The Government started out with a reasonable proposal and ended up with an expensive process which does little to fulfil GB energy policies. Certainly, if BEIS and Ofgem are serious about delivering a flexible and smart energy system they should fundamentally change the capacity market design.

In a wider sense, there seems to be a gap between pro-market rhetoric and action within GB energy policy. There needs to be far greater transparency and legitimacy of decision-making – which should help with having a more joined-up policy.

A system for consumers, questions 28-4 , page 62, 65, 68, 71

Please see section 3.

The role of different parties in system and network operation, questions 43-46, page 82

We like your Figure 1, page 73; we agree that arrangements have to evolve to reflect how the system is changing (5.1, para 2) and efficient use of local / system-wide resources. We broadly see a combined role of all 3 areas as set out in Figure 2, page 80, although we would see enhanced DSP management in your 'responsibilities in system operation', and priority of bottom-up optimisation if a decision had to be made between distribution and transmission. This agrees with your para 20, page

²⁰ <http://projects.exeter.ac.uk/igov/lessons-from-america-capacity-market-details-and-demand-side-response/>

²¹ <http://projects.exeter.ac.uk/igov/britains-dinosaur-capacity-market-will-worsen-energy-trilemma/>

²² <http://projects.exeter.ac.uk/igov/new-thinking-capacity-market-and-dsr-the-thin-purple-line/>

²³ <http://projects.exeter.ac.uk/igov/new-thinking-the-empire-strikes-back-first-capacity-auction-outcomes/>

81 that says that the models are not mutually exclusive – indeed all aspects of the energy systems have to be integrated because of their whole system reality.

With respect to question 43, we think that data, and its availability is missing. We think data should be viewed as an enabling resource for innovation and freely available. With respect to question 44, we suggest you look at the NY REV's initial CBA and subsequent evaluations. They clearly state cost and efficiency savings through coordination. With respect to question 45, no we do not agree with the roles you have for DSOs and the SO – as set out in the IGov framework²⁴. With respect to question 46, yes, we do think further changes need to be made to institutional and regulatory arrangements – again, as set out in the IGov framework.

Innovation, questions 47-48, page 86.

It is indisputable that Ofgem has for decades tried to encourage innovation within the energy system. How much innovation has occurred is dubious. We would argue that a more directed transformation of the energy system needs to take place but not based on the current way of doing things – which is Ofgem telling people what to do. We think a framework process has to be set up which enables new ways of valuing new things – thereby encouraging and enabling innovation. This is set out in the IGov framework. This CfE is a good first step in trying to do that.

In general, BEIS and Ofgem need to get a grip on what is happening within the energy system. It is not that we in GB want 'any' innovation – we want innovation which takes us to a decarbonised, secure and affordable energy system (which includes flexible and smart) which can meet our CCC carbon budgets in 2050. This is not going to happen in the current 'market' system or just through 'more' competition. It needs more direction, and finding that direction needs to be more legitimate (see Section 3).

Rather than, for example, Ofgem allowing £500 m through the LCNF, which has had unclear long term benefits, it would be far better to start moving the DNOs into active, market facilitating mode (such as a DSP) with clear timelines and expected outcomes linked to their revenues – as is occurring in NY. Distribution networks need to provide local data (so that new services can be offered) and to create local physical balancing markets via the DSP which can also link into the many platforms which are developing in an ad hoc way around the country (questions 47 and 48). This would enable the local bringing together of supply and demand, the first step in a demand focused, flexible and smart energy system.

6. Conclusion

The EPG welcomes this consultation. Developing a more flexible and smart energy system absolutely is the key step towards a sustainable, affordable and secure energy system. We think, because of the unprecedented change occurring within energy systems, that institutional change and a rethink in the way that we provide value within energy systems is required. This is one dimension of a debate that GB needs to have about the role of energy in society, and who and what the energy industry is serving, and how that should be undertaken.

²⁴ <http://projects.exeter.ac.uk/igov/wp-content/uploads/2016/11/Final-Framework-Paper.pdf>