Response ID ANON-BJ6H-GNHJ-H

Submitted to **A smart, flexible energy system: a call for evidence**
Submitted on **2017-01-10 17:39:29**

Introduction

1 What is your name?

Name:
Jon Bird

2 What is your email address?

Email:
jon.bird@sustainabilityfirst.org.uk

3 What is your organisation?

Organisation:
Sustainability First

Enabling storage questions

1.1 Have we identified and correctly assessed the main policy and regulatory barriers to the development of storage?

Not Answered

Please provide evidence to support your views.:
No response.

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

1.2 Are there any additional barriers faced by industry?

Please provide evidence to support your views.:
No response.

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

2.1 Have we identified and correctly assessed the issues regarding network connections for storage?

Not Answered

Please provide evidence supporting your views:
No response.

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

2.2 Have we identified the correct areas where more progress is required?

Not Answered

Please provide evidence supporting your views:
No response.

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

3.1 Have we identified and correctly assessed the issues regarding storage and network charging?

Not Answered

Please provide evidence to support your views, in particular on the impact of network charging on the competitiveness of storage compared to other providers of flexibility.:
No response.

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

3.2 Do you agree that flexible connection agreements could help to address issues regarding storage and network charging?

Not Answered

Please provide evidence to support your views, in particular on the impact of network charging on the competitiveness of storage compared to other providers of flexibility.:
No response.

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

4.1 Do you agree with our assessment that network operators could use storage to support their networks?

Yes

Please provide evidence supporting your views:
LCNF projects such as Northern Powergrid's CLNR project (see, for example, http://www.networkrevolution.co.uk/project-library/electrical-energy-storage-2-100kva200kwh-powerflow-management/) have demonstrated that storage can provide value. But cost is important in establishing value for money.

If you wish to provide any further supporting evidence please attach the relevant file.:
CLNR-Trial-Analysis-EES2-Autonomous-Powerflow.pdf was uploaded

4.2 Are there sufficient existing safeguards to enable the development of a competitive market for storage?

Not Answered

Please provide evidence supporting your views:
No response.

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

4.3 Are there any circumstances in which network companies should own storage?

No

Please provide evidence supporting your views:
Unlike the network itself, storage is not a natural monopoly and so does not need to be part of a DNO's regulated asset base. Indeed, ownership may create conflicts of interest between the use of owned assets and bought in flexibility.

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

5 Do you agree with our assessment of the regulatory approaches available to provide greater clarity for storage?

Not Answered

Please provide evidence to support your views, including any alternative regulatory approaches that you believe we should consider, and your views on how the capacity of a storage installation should be assessed for planning purposes.:
No response

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

6 Do you agree with any of the proposed definitions of storage? If applicable, how would you amend any of these definitions?

Not Answered

Please give us your views.:
No response.

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

Aggregator questions

7 What are the impacts of the perceived barriers for aggregators and other market participants?

Please provide evidence supporting your views:
Aggregators could well bring forward additional flexibility in different sections of the GB electricity markets, and already do so successfully in balancing services. Potentially, through bi-lateral arrangements, aggregators could usefully support individual suppliers to meet their contract positions at gate closure in the balancing mechanism. However, aggregators have a concern that suppliers may not necessarily contract with them where suppliers see aggregators as their competitors.

Discussion about the barriers faced by aggregators in entering different segments of the GB electricity markets needs to take account of two key issues:

• The costs and benefits of aggregator participation in different parts of the market, including a clear understanding of how aggregator participation will impact overall system efficiency and system costs; and

• The need to support those smaller players, which are currently developing flexibility solutions, through the current uncertainties they face in the markets regarding future values and revenues for flexibility services.

We address each of these in turn.

Overall system costs and benefits

Currently there is no model or comprehensive evaluation which addresses overall system benefits and costs associated with aggregator activity. The ultimate test is whether, over time, aggregator participation translates into demonstrable cost-savings for the end-consumer from a more efficient electricity system overall. This is particularly important in relation to Balancing Mechanism participation.

Balancing Mechanism participation : in discussion about direct participation by aggregators in the Balancing Mechanism, neither the Call for Evidence nor the supporting document on aggregators by PA Consulting (May 2016) seem to recognise sufficiently the fundamental principle that underpinned the original design of NETA / BETTA: namely, that the market was designed as a bi-lateral 'self-balancing' market. Balancing mechanism incentives, however weak or imperfect, were designed to encourage contractual self-balance pre-gate closure. The system- operator role in NETA is as the last-hour residual balancer: first, to adjust the contracted market position at gate-closure up or down via the BM; and second, in real-time to balance efficiently (1) through cost-effective prior-procurement from the market of the services required for balancing (response, reserve, etc) and (2) to deploy those technical services cost-efficiently into real-time as needed.

To maintain a downward pressure on balancing costs, and consistent with the original market design, Ofgem's subsequent cash-out review recognised a need to sharpen the incentives on market actors to self-balance pre-gate closure. Sharper cash-out prices may only now be starting to impact those market actors who are current BSC signatories (reinforced by more volatile half-hourly prices and growth in the half-hourly settled customer base).

Direct third-party participation in the BM may therefore risk distorting current incentive arrangements for suppliers to 'self-balance'. Neither the BEIS Call nor the PA document spell this out. Instead, much discussion is rightly devoted to the question of how to address compensation for any additional costs created by third-party participation in the BM, and which, if not correctly allocated or compensated, risk being socialised through to end-customers. However, failing to spell out that NETA was initially designed as a self-balancing market, makes it rather hard to address the subsequent questions posed about different approaches to third-party participation in the BM.

Support for innovative flexible solutions
If ten years hence, we want a world where innovative players (whether new entrants or incumbents) can actively and cost-effectively support a lower-cost power system overall through providing demand-side flexibility at scale, then initially at least we may need to take some active steps today to nurture likely actors and grow these flexibility services. Potentially, this may be more effective initially alongside current market arrangements - including perhaps through separately defined services and / or ring-fenced demand-side platforms and markets.

To ensure their commercial survival, current demand-side actors need a better long-run view on future revenue streams. Without greater clarity on future sources of revenue they will struggle to finance their activities, and also to 'market-make' with end-customers (in turn risking credibility of this nascent market). Also, given current uncertainty on embedded benefits and network charges (both T&D), there are arguably just too many moving parts to assure a near-term demand-side business case for aggregators or for end-customers. Initially, it may therefore not necessarily be a priority to grant direct access to the current Balancing Mechanism or indeed to the wholesale markets. Even if there is a wish to establish fully integrated and market-led approaches for demand-side flexibility in the long-term, for the interim we might wish to acknowledge more clearly that some dedicated demand-side initiatives may be needed to establish value for demand-side flexibility / consolidate scale. The metrics in the Power Responsive 2016 annual report (http://powerresponsive.com/wp-content/uploads/2016/12/Power-Responsive-Annual-Report-2016.pdf), showing very little current market share for demand-side flexibility services, even in Balancing services, would seem to reinforce such a need.

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

Please provide evidence supporting your views:

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

8 What are your views on these different approaches to dealing with the barriers set out above?

Please provide evidence supporting your views:
Table 5 sets out incremental levels of 'intervention' to address barriers for aggregators, cross-market impacts, and the need for consumer safeguards.

Aggregators could potentially play a direct role in the balancing mechanism and/or the wholesale markets (e.g. the NEBEF pilot in France), but whichever approach to barriers is adopted, a number of key issues need to be addressed:

(1) Customer safeguards: this is ultimately a question about scale and the likely time-line for market development for flexibility. For so long as aggregators mainly interface with large I&C customers, the need for strong customer safeguards may be less. As half-hourly settlement extends to more customer groups (eg Load Profiles 5-8), there could well be greater need to safeguard customers against mis-selling or other poor practice by third parties who do not hold a supply licence. The proposed industry voluntary code of conduct can be expected to help here. However, once aggregators start to interface directly with small and household customers, then the need for customer safeguards will grow rapidly. Ongoing dialogue with industry participants and other stakeholders will be needed to ensure developing requirements are met (see answer to question 14).

(2) Cross-market impacts: As flexibility actions managed by aggregators grow both in value and in volume, an appropriate compensation solution may indeed become necessary to ensure redress to suppliers for any new or unexpected liabilities which may arise elsewhere in the market as a result of 'unseen' aggregator actions. As noted above, if such costs are not correctly allocated or compensated, they risk increasing balancing costs overall and / or being socialised through to end-customers. Approaches for managing imbalance compensation are discussed comprehensively in the PA Consulting document. Any approach adopted would need to be (1) transparent; (2) readily understood and implemented in the wider market; and importantly (3) proportionate for the market as a whole in terms of added complexity and / or creating new transaction costs.

Cross-market impacts: future availability of better customer consumption data. In a market where incentives are largely designed to encourage 'self-balancing', then it seems likely, as ever-more half-hourly data becomes available to suppliers, that suppliers' capability for better prediction of their customer consumption patterns should also improve (be that for individual customers or for particular customer 'segments'). In theory, half-hourly settlement coupled with better insight into their customers' consumption should drive suppliers commercially to improve their approaches to future energy procurement against their half-hourly contract match at gate closure - and so improve general management of their imbalance exposures.

Arguably, this 'future view' suggests that some of the rather complex compensation remedies proposed in the Call for Evidence to manage cross-market impacts that arise from aggregator actions (i.e. as a safeguard against major or persistent new costs arising elsewhere in the market from 'unexpected' or 'unseen' aggregator actions) may be premature or possibly needlessly complex. It is perhaps too early to judge. To reach a considered view on compensation mechanisms, a major question arises first as to how far future access to improved customer data, whether for end-consumption or for own-generation, could help to improve management of imbalance and flexibility in the markets overall - in particular, how this more granular customer data could eventually inform operation of the flexibility markets to best serve the interests of the end-customer. A further set of questions then arise as to who can access that customer data and on what basis.

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

9 What are your views on the pros and cons of the options outlined in Table 5?

Please provide evidence supporting your views:
See response to question 8

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

10.1 Do you agree with our assessment of the risks to system stability if aggregators' systems are not robust and secure?

Yes

Please provide evidence supporting your views:
See response to question 8

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

10.2 Do you have views on the tools outlined to mitigate this risk?

Please provide evidence supporting your views:
See response to question 8.

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

System value pricing questions

11 What types of enablers do you think could make accessing flexibility, and seeing a benefit from offering it, easier in future?

Please provide evidence supporting your views:
Over the last ten years, Sustainability First has played a lead role in helping to develop policy and regulatory thinking for the GB demand-side. In a series of projects and papers on the role of the energy demand side (http://www.sustainabilityfirst.org.uk/index.php/energy-demand-side), Sustainability First has formed a considered view that a move to greater cost-reflection in charges faced by suppliers (wholesale and imbalance charges through half-hourly settlement plus network and levy charges) will be beneficial for development and operation of a more cost-effective and efficient electricity system overall. In the near term, these developments should give a stronger signal to (1) suppliers and (2) to I&C customers. Once universal half-hourly settlement, suppliers will also then face significant choices about how much cost-reflection to introduce to end-customers – especially households - via retail tariffs. Sustainability First's view is that this

should be an evolution over time, proportionate, and that there will need to be satisfactory safeguards for small and household customers which take full account of the possible distributional impacts (see, in particular, http://www.sustainabilityfirst.org.uk/images/publications/other/Sustainability_First_-_Discussion_Paper_by_Jon_Bird_-_Smarter_fairer__Cost-reflectivity_and_socialisation_

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

12 If you are a potential or existing provider of flexibility could you provide evidence on the extent to which you are currently able to access and combine different revenue streams?

Please provide evidence supporting your views:
No response

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

Please provide evidence supporting your views:
No response

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

13 If you are a potential or existing provider of flexibility are there benefits of your technology which are not currently remunerated or are undervalued?

Not Answered

Please provide evidence supporting your views:
No response

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

Please provide evidence supporting your views:
No response

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

14 Can you provide evidence to support changes to market and regulatory arrangements that would allow the efficient use of flexibility and what might be the Government's, Ofgem's, and System Operator's roles in this?

Please provide evidence supporting your views:
A considerable amount of work has been carried out in this area over the last few years, including:

• Joint work by the Energy Networks Association and Energy UK leading, in July 2012 to a discussion paper (http://www.energynetworks.org/assets/files/news/publications/Smart_Demand_Response_A_Discussion_Paper_July12.pdf)
• Sustainability First's three year multi-party GB Electricity Demand-Side project in 2011-14, resulting in thirteen published papers, co-ordinated through a multi-party Smart Demand Forum (http://www.sustainabilityfirst.org.uk/index.php/energy-demand-side/gb-electricity-demand)
• DECC and Ofgem Smart Grid Forum (https://www.ofgem.gov.uk/electricity/distribution-networks/forums-seminars-and-working-groups/decc-and-ofgem-smart-grid-forum) and the outputs of its various workstreams, in particular Workstream 6 on a customer-led smart grid (completed in December 2015).

The output from each of these initiatives has produced practical and useful outcomes to take forward development of the small-customer demand-side , leading up to the BEIS Call for Evidence. However, demand-side flexibility is a highly complex area, with many changed or new inter-actions. As greater understanding develops, new issues, enablers and barriers will be identified. These issues will need informed discussion in in a forum which includes market actors, government, the regulator, customer and consumer representatives and other stakeholders. While for larger I&C customers, National Grid's Power Responsive initiative provides such a forum, there is currently no equivalent forum for addressing future development of demand-side flexibility for smaller customers.

Sustainability First believes that there is a significant need for a standing group to continue to look at household flexibility and the household demand-side in the round. This view stems from on our extensive experience, gained over a decade, in providing leadership to a number of major GB demand-side and flexibility projects and from participating in many cross-sector working groups and stakeholder discussions. There was strong evidence from our GB Electricity Demand project that, if DSR at the domestic level was to be successful it needed to be made significantly more attractive to the customer and that suitable customer safeguards needed to be in place which gave adequate protection while allowing innovation to flourish.

We believe that there is a need for a household demand-side flexibility standing group - relatively senior but also capable of doing some 'work' - able to take a collective and deep dive into the main issues for development of a successful flexible household energy demand-side. The aim would be to ensure coherence and consistency of approach, early-warning on unexpected outcomes, and to improve consensus and achieve a degree of common understanding across the many different actors, interests and complexities.

This is not to suggest that development of a flexible household demand-side will not be market-led. Rather, that the complexity and scope for sub-optimal and / or unexpected outcomes is significant – and that a successful transition will need some oversight and detailed and collective forward thinking in the round.

Such a group would look holistically at development of a small-customer GB demand-side. It would improve detailed understanding of the main enablers, barriers and actions to facilitate household flexibility in the wake of the smart meter roll-out (but smart meters would not be the only demand-side 'enabler' to be considered).

Such a group would develop a greater collective understanding of the key obstacles for development of household flexibility, including how to unlock commercial value in the context of the GB power markets.

Such a group could of course sit within the proposed new Smart Systems Forum. It could also be time-limited. In any case any such group would need strong BEIS and Ofgem support and involvement. It would also need appropriate consumer representation at the table, and, because its main focus would be households, including energy customers in vulnerable circumstances, consumer and NGO participation may need resourcing in some way.

Some topics which a household-focused group would consider are touched on in the call for evidence. Sustainability First's initial 'menu' of topics – based on our current and former work (references included in the separately attached document) – and where high-level thinking is yet needed on the household demand-side beyond the smart meter roll-out and for a sustained period in the round (i.e. not just via one-off stakeholder events on separate topics) – and how these relate to a world of Principles-based regulation – include the following:

• Future tariffs: possible outcomes on half-hourly settlement & cost-reflection, principles of 'fairness', retailer responses including cherry-picking, mandatory changes, approaches to price comparisons etc.
• Customer safeguards and protections: unexpected bills (CLNR trial), 'lock-in' to kit sales (eg connected home), multi-utility models, pre-pay, debt calibration etc.
• Community & local flexibility schemes: group approaches to supply, supply licence requirements, etc.
• Smart appliances: requirements (if any), standardisation, avoiding proprietary set-up and lock-in etc.
• Privacy: developments on customer consents on their data, DAPF review etc.
• Cyber security: smart meters, CADs, IoT etc – what is 'acceptable' customer or system risk?
• Export metering: PV, storage etc – DNO & regulatory expectations, future requirements etc
• Trials: what to address via trials? eg what knowledge gaps? which institutional & regulatory barriers? what customer outcomes to test? near-commercialisation (or not)? etc.
• Customers in vulnerable circumstances : whether and how demand-side flexibility might serve such customers well.

Sustainability First's close involvement over the past eighteen months with the Power Responsive initiative instigated by National Grid (see http://powerresponsive.com/ http://powerresponsive.com/wp-content/uploads/2016/12/Power-Responsive-Annual-Report-2016.pdf), suggests that provided discussion is managed with a view to practical outcomes, this kind of collective 'journey' can add up to more than a sum of its parts. It can help to focus down hard on the major barriers and to resolve problems in a consensual way to ensure a better implementation / transition to demand-side flexibility – all of which the household sector will need.

If you wish to provide any further supporting evidence please attach the relevant file.:
Smart flexible Energy System - references.docx was uploaded

Smart tariff questions

15 To what extent do you believe Government and Ofgem should play a role in promoting smart tariffs or enabling new business models in this area?

Please provide a rationale for your answer, and, if you feel Government and Ofgem should play a role, examples of the sort of interventions which might be helpful. :
See answer to question 14.

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

16 If deemed appropriate, when would it be most sensible for Government/Ofgem to take any further action to drive the market (i.e. what are the relevant trigger points for determining whether to take action)?

Please provide a rationale for your answer.:
No response.

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

17 What relevant evidence is there from other countries that we should take into account when considering how to encourage the development of smart tariffs?

Please provide evidence supporting your views:
See "Demand side response in the domestic sector - a literature review of major trials
By Frontier Economics & Sustainability First (August 2012)"
(https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48552/5756-demand-side-response-in-the-domestic-sector-a-lit.pdf). Evidence and insight from overseas can be helpful – in particular how at some future point, once UK has some large single point household loads which can be automated

(EVs, Electric Heat, batteries), this load could offer household flexibility into the GB markets through demand-side management approaches. Relevance of overseas literature largely relates to (1) Load-type, (2) Extent of and approaches to automation and (3) Approaches to retail tariffs

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

18 Do you recognise the reasons we have identified for why suppliers may not offer or why larger non-domestic consumers may not take up, smart tariffs? If so, please provide details, especially if you have experienced them.

Yes

Please provide evidence supporting your views:
Sustainability First's GB Electricity Demand project paper 3 (http://www.sustainabilityfirst.org.uk/index.php/gb-elec-demand-publications) and Power Responsive Annual Report 2016 (http://powerresponsive.com/wp-content/uploads/2016/12/Power-Responsive-Annual-Report-2016.pdf) contain much evidence of relevance to this question. In their Customer-Led Network Revolution (CLNR) project, Northern Powergrid investigated the extent to which the introduction of time-of-use distribution tariffs (ToU DUoS) across all of their large business customers affected their peak electricity consumption. The study found that the introduction of peak-related distribution charges had produced only a very limited impact on peak-usage in practice.(http://www.networkrevolution.co.uk/wp-content/uploads/2015/01/April-2010-CDCM-Tariff-Reform-Report-230115-more-anonomisation.pdf)

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

Not Answered

Please provide evidence supporting your views:
See response above.

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

Smart distribution tariffs: Incremental change questions

19 Are distribution charges currently acting as a barrier to the development of a more flexible system?

Yes

Please provide details, including experiences/case studies where relevant.:
Until half-hourly settlement is made available for smaller customers, distribution charges cannot be charged cost-reflectively to suppliers with respect to the peak-related usage of their individual small and household customers. In turn this means that distribution charges currently do not play a part in incentivising suppliers to develop flexibility incentives for their small and household end-customers. This may change with half-hourly settlement.

We support the proposal for a review of Distribution Charges – but, despite the complexity of the issue, this needs to be tackled in the round so that the signals embodied in distribution charges for flexibility – and therefore signals to suppliers and ultimately to end-customers - are better aligned. This will entail looking holistically at approaches and methodologies for connection charges and distribution use of system charges (including possible locational approaches) – and importantly, how these align with transmission connection and transmission use of system charges.

Avoided network peak charges (transmission, distribution) are potentially a significant part of the overall business case for many I&C end-customers in providing / offering flexibility services to electricity market actors. The intended reviews of these charges, and any proposals to change their under-lying methodologies (including future approaches to cost-allocation in the charges of short-run and long-run costs) will need tackling with great care, be evolutionary and be clearly signalled ahead.

See Sustainability First GB Electricity Demand project Paper 10 (http://www.sustainabilityfirst.org.uk/index.php/gb-elec-demand-publications).

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

20 What are the incremental changes that could be made to distribution charges to overcome any barriers you have identified, and to better enable flexibility?

Please provide evidence supporting your views:
There needs to be consistency in approaches to methodology changes to distribution charges – with a clear 'future plan' to show what kind of changes will be tackled and when. For example, some DNOs have introduced elective peak charges at low voltage (eg Northern Powergrid). At the same time, from April 2018, DCP228 introduces changes to the current approach to cost-allocation in the distribution charging methodology which will significantly reduce current peak/off-peak differentials in DUOS charges (eg in the south west, the differential between red and green rates could reduce from nearly 18p/kWh in 2016-17 to more like 5p/kWh from April 2018) (see http://powerresponsive.com/wp-content/uploads/2016/12/Power-Responsive-Annual-Report-2016.pdf. Page 13)

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

21 How problematic and urgent are any disparities between the treatment of different types of distribution connected users?

Please provide evidence supporting your views:
No response

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

Smart distribution tariffs: Fundamental change questions

22 Do you anticipate that underlying network cost drivers are likely to substantively change as the use of the distribution network changes?

Yes

Please provide evidence supporting your views:
As set out in response to question 11, Sustainability First's view is that a move to greater cost-reflection in charges faced by suppliers (wholesale and imbalance charges through half-hourly settlement plus network and levy charges) will be beneficial for development and operation of a more cost-effective and efficient electricity system overall. But, importantly, this should be an evolution over time, proportionate, and with satisfactory safeguards for small and household customers which take full account of the possible distributional impacts (see, in particular, http://www.sustainabilityfirst.org.uk/images/publications/other/Sustainability_First_-_Discussion_Paper_by_Jon_Bird_-_Smarter_fairer__Cost-reflectivity_and_socialisation_
.

At some point, as the amount of self-generation increases, distribution charges will need to recognise the maximum demand domestic customers place on the network if they are to reflect the underlying costs. Four issues arise in determining the structure of such charges:
• Because there are many domestic customers on an individual feeder, it is the averaged (diversified) maximum demand (or ADMD) that is relevant for network investment, not individual households maximum demand. So an individual per kW charge may or may not be appropriate, unless it also combines into serving as some form of broader 'communal' or local geographic signal .
• A simple Distribution ToU tariff could needlessly penalise peak time use where the system is neither likely to be under stress or congested.
• A choice would need to be made between charges based on short-run marginal cost (which would provide the appropriate financial signals to the DNO to consider alternatives to network investment in hotspots, but which would vary with location) and long-run marginal cost (which would not be locationally dependent) and so would be fairer to customers, who have little choice about whether network infrastructure locally is in need of reinforcement.
• For local and community energy projects which aim to generate and use power locally, cost-related network charges should reflect their net impact on the wider system: not gross impact as at present. This is relevant to the current review of embedded benefits. It is important to review the position as a whole.

The DECC / Ofgem Smart Grid Forum Workstream 6 examined at length different approaches to possible consumer-facing distribution charges. It focused on (1) identifying options for consumers to engage with smart grids and (2) on understanding how these options could work in practice. The interim report, published in April 2014, defined the roles and relationships between consumers, network companies, suppliers and other industry groups required for each option identified. It examined in detail such options for future distribution charging as critical peak / TRIAD-type charges, capacity charges (capped, capped at peak-time, seasonal peak etc (https://www.ofgem.gov.uk/sites/default/files/docs/2014/08/ws6_report_april_2014_final_for_publication_august_2014_0.pdf).

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

Please provide evidence supporting your views:
See response above.

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

23 Network charges can send both short term signals to support efficient operation and flexibility needs in close to real time as well as longer term signals relating to new investments, and connections to, the distribution network. Can DUoS charges send both short term and long term signals at the same time effectively?

Maybe

Please give us your views.:
For domestic customers, short term dynamic signals in network charges may be difficult to implement without automation.

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

Not Answered

Please provide evidence supporting your views:
See response above.

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

24 In the context of the DSO transition and the models set out in Chapter 5 we would be interested to understand your views of the interaction between potential distribution charges and this thinking.

Please provide evidence supporting your views:
To achieve efficient regional / local balancing, a DSO could well need new or different incentives (possibly more akin to current SO incentives). This would also most likely entail different approaches to cost-recovery of charges (eg as per SO BSUOS charges) ; and, in the long run, such DSO charges may well become completely separate from DNO asset-related charges.

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

Other Government policies questions

25 Can you provide evidence to show how existing Government policies can help or hinder the transition to a smart energy future?

Please provide evidence supporting your views:
Lessons for future policy initiatives can be learnt from some now-abandoned policies (Green Deal, zero carbon homes). In particular, rigorous trialling is needed before deciding how to progress at volume.

European Network Codes – UK Implementation. The third energy package seeks technical and commercial harmonisation and integration for the single energy market, including through the introduction of the European Network Codes. These rules are directly legally binding, with the potential for infraction proceedings for non-implementation. There is a clear implementation timetable – with a prescriptive level of detail and requirement which extends, inter al, to new entrants, smaller actors, and the demand-side.

A number of questions arise as to how the EU Codes may knock through into (1) new or additional requirements in current GB Codes and (2) the level of effort and capability required in terms of implementing these arrangements into GB Codes (however this in the end might be done).

In addition, it is unclear how the process of implementing the EU Codes in the UK currently sits against other significant initiatives already in hand in GB energy markets. For example : CMA remedies on code reform and governance ; the Smart Energy call for evidence – including encouragement of demand-side flexibility and new entry, but, in particular, the discussion on future roles and responsibilities (DSO, SO) which also may have long-run implications for GB Codes and Licences ; and, last but not least, how the expected time-table for European code implementation sits against current uncertainty around the single energy market and UK exit from the EU.

It will be important to spell out how the implementation process for the EU codes is expected to sit alongside other current developments in the GB energy markets.

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

26 What changes to CM application/verification processes could reduce barriers to flexibility in the near term, and what longer term evolutions within/alongside the CM might be needed to enable newer forms of flexibility (such as storage and DSR) to contribute in light of future smart system developments?

Please provide evidence supporting your views:
No response

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

27 Do you have any evidence to support measures that would best incentivise renewable generation, but fully account for the costs and benefits of distributed generation on a smart system?

Please provide evidence supporting your views:
No response

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

Smart appliances questions

28 Do you agree with the 4 principles for smart appliances set out above (interoperability, data privacy, grid security, energy consumption)?

Interoperability, Data privacy, Grid security, Energy consumption, Others/None of the above (please specify)

Please provide evidence supporting your views:
Cyber security (through interaction with the internet) is also important. Recent newspaper reports have suggested that the existence of a large number of smart devices connected to the internet, often without passwords having been reset from their factory settings, could be used by criminals as a basis for cyber-crime.

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

29 What evidence do you have in favour of or against any of the options set out to incentivise/ensure that these principles are followed?

Please provide evidence supporting your views:
No response

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

Please provide evidence supporting your views:
Development of proprietary approaches to the ‘connected home’ seem likely, but in the long run we doubt that these will prove the most beneficial from a customer perspective. Consumers are more likely to benefit from development of open and interoperable approaches to the connected home.

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

Please provide evidence supporting your views:
Option C looks potentially premature and possibly unduly ‘far-reaching’. It is for manufacturers to judge the business case and demonstrate the value for the end-customer.

If you wish to provide any further supporting evidence please attach the relevant file. :
No file was uploaded

Please provide evidence supporting your views:
No response

If you wish to provide any further supporting evidence please attach the relevant file. :
No file was uploaded

30 Do you have any evidence to support actions focused on any particular category of appliance? Please use the text boxes/attachments to provide your evidence for the different categories:

Please provide evidence supporting your views:
Data concerning domestic use of appliances remains surprisingly limited as discussed in our Sustainability First GB Electricity Demand project paper 11, and despite actual smart appliance deployment in customer trials such as the Customer-Led Network Revolution project. The latter demonstrated that smart appliances and their associated communications and controls remain at an early stage of development and there is a need for rigorous testing both of their operation in real-life situations and of customer acceptability, before firm conclusions can be reached on their impact.

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

Please provide evidence supporting your views:
See response above

If you wish to provide any further supporting evidence please attach the relevant file. :
No file was uploaded

Please provide evidence supporting your views:
See response above

If you wish to provide any further supporting evidence please attach the relevant file. :
No file was uploaded

Please provide evidence supporting your views:
See response above

If you wish to provide any further supporting evidence please attach the relevant file. :
No file was uploaded

Others (please specify):
See response above

If you wish to provide any further supporting evidence please attach the relevant file. :
No file was uploaded

31 Are there any other barriers or risks to the uptake of smart appliances in addition to those already identified?

Yes

Please provide evidence supporting your views:
See the response to question 30. There is a need for more evidence about customers’ preferred use of key appliances. For instance, if washing machines tend not to be commonly used at times of peak or high- electricity prices, smart ‘savings’ to end-customers - and to the electricity system overall - may fail to outweigh the costs of implementation.. Evidence suggests that EV customers are keen to want their EVs kept topped up. In this case, vehicle-to-grid capabilities may not prove value for money.

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

32 Are there any other options that we should be considering with regards to mitigating potential risks, in particular with relation to vulnerable consumers?

Yes

Please provide evidence supporting your views:
Sustainability First is currently leading a new multi-partner project 'Inspire'. This is exploring how innovative approaches, including smart approaches, could improve services for energy consumers in vulnerable circumstances and what the main enablers and barriers might be. The project will also identify innovative case-studies which are demonstrably beneficial, scalable, affordable and replicable. These will be show-cased in spring and summer 2017.

Ofgem's Regulatory Stances document (December 2016) rightly stresses that energy customers in vulnerable circumstances are a main regulatory priority. In terms of smart innovation however, unless commercially attractive, or applicable to every customer, development of innovative approaches to service for customers in vulnerable circumstances may not necessarily be a priority for market actors or others, not least because market actors currently face many other internal requirements for change-management around 'smart'. Either way, in prioritising energy customers in vulnerable circumstances for innovative or 'smarter' services, it is important that there are tangible benefits which genuinely outweigh the potential risks of poor, inadequate or a more costly service.

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

Low emission vehicles questions

33 How might Government and industry best engage electric vehicle users to promote smart charging for system benefit?

Please provide evidence supporting your views:
Evidence suggests that electricity use is determined by habit and convention. There could be benefit in encouraging smart charging from the point when people acquire their EV, particularly since these people are likely to be more engaged than average.

If you wish to provide any further supporting evidence please attach the relevant file. :
No file was uploaded

34 What barriers are there for vehicle and electricity system participants (e.g. vehicle manufacturers, aggregators, energy suppliers, network and system operators) to develop consumer propositions for the:

Please provide evidence supporting your views:
No response

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

35 What barriers (regulatory or otherwise) are there to the use of hydrogen water electrolysis as a renewable energy storage medium?

Please provide evidence supporting your views:
No response

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

Consumer engagement with DSR questions

36 Can you provide any evidence demonstrating how large non-domestic consumers currently find out about and provide DSR services?

Please provide evidence supporting your views:
Sustainability First has been closely involved with providing strategic advice to the Power Responsive initiative for I&C customers, set up in 2015 as a collaborative programme by National Grid.

Power Responsive was designed :
(1) to raise awareness among I&C customers of the demand-side flexibility opportunity and potential revenue and cost-savings available to them from their participation in different demand-side schemes
- and -
(2) to 'market-make' and convene people (market actors, interested businesses) to tackle some of the main obstacles to I&C customer participation in today's GB demand-side flexibility markets.

Much of what Power Responsive has delivered in its first year is covered in the Annual Report 2016 - published on 23 December 2016 (http://powerresponsive.com/wp-content/uploads/2016/12/Power-Responsive-Annual-Report-2016.pdf). This included multiple outreach initiatives (Power Responsive website - http://powerresponsive.com/; engaged with 370 businesses & 700 people; ran two major conferences; ran workshops for 35 NHS hospital estates managers and for Scotland DSR opportunity), publication of simpler demand-side information and resources for I&C Customers, and practical workshops to bring together businesses and market actors in a non-sales environment (including an infographic about the different demand-side flexibility markets; twenty

published DSR case studies; training and publication of a DSR handbook with the Major Energy Users Council and a short ‘How-To’ guide for business customers).

The first year has been judged broadly successful in terms of awareness raising of the demand-side opportunity among many large I&C customers, although this effort may not necessarily translate into an immediate or significant increase in customer uptake. In the second year, Power Responsive will have a stronger emphasis on delivery, focusing on customer engagement, products, services and customer confidence, and future evolution of flexibility markets.

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

37 Do you recognise the barriers we have identified to large non-domestic customers providing DSR?

Yes

Please give us your views.:
Power Responsive has devoted much time to identifying and considering the barriers to business participation in DSR. This thinking very largely coincides with the barriers identified in the Call for Evidence. Namely, a need for simpler more accessible information ; the need to deepen engagement about DSR on a sector-specific basis ; the need to create simpler Balancing products and ensuring that these are easier to access ; greater clarity on which schemes are suited to which customers and their business assets ; what the associated cost savings or revenue-earning potential might be : which DSR schemes can / cannot readily combine and how ; a need to improve business confidence in dealings with aggregators (and which the intended voluntary industry-led code of conduct should help) ; and, to widen engagement with end-customers about fast-developing flexible technologies such as storage.

In addition, insight about customer experience on barriers to participation has been informed by three separate major surveys of DSR customers by the Energyst magazine, by Ofgem and by National Grid(https://theenergyst.com, https://www.ofgem.gov.uk/publications-and-updates/industrial-commercial-demand-side-response-gb-barriers-and-potential).

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

Please provide evidence supporting your views:
See response above.

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

38 Do you think that existing initiatives are the best way to engage large non-domestic consumers with DSR? If not, what else do you think we should be doing?

Yes

Please provide evidence supporting your views:
The Power Responsive Annual Report 2016 ((http://powerresponsive.com/wp-content/uploads/2016/12/Power-Responsive-Annual-Report-2016.pdf) attempts some initial metrics for demand-side flexibility, by drawing together currently available data and analysis on demand-side flexibility in electricity markets. The aim is to develop some baseline metrics against which progress year-on-year can be judged in the future. Current data is inevitably patchy. Looking ahead, there is an open question as to where prime responsibility for development of robust demand-side metrics against which demand-side market development can be objectively judged and measured should sit going forward (ie Ofgem, BEIS, Power Responsive or market actors?).

Some data is available on ‘contracted’ markets such as balancing and capacity, but there is very poor data on ‘self-despatched’ flexibility activity (e.g. in the wholesale markets ; or, on customer self-management of their network charges through peak avoidance (TRIADs, DUOS).

The Power Responsive annual report data indicates, notwithstanding the theoretical potential for I&C business customer participation in demand-side flexibility markets, that in practice the demand-side remains a relatively small segment of the overall capacity contracted in the Balancing and Capacity markets. Most I&C customer demand-side participation is currently via on-site generation rather than load turn-down (other than some frequency provision). A new market for load turn-up is developing. In part, the currently modest demand-side contribution made in the contracted markets reflects the fact that currently, for many companies other than energy intensive businesses, energy purchase is not a key boardroom issue. Those with responsibility for energy purchase decisions may have difficulty in persuading operational managers of the value to be obtained from operational flexibility. This may be one reason why use of back up generation for DSR is currently easier for a business, rather than varying its load.

The Annual Report shows how self-despatched TRIAD activity has increased from 1 GW in 2009-10 to 2 GW in 2015-16. This is partly because suppliers and others are advising businesses when to reduce their load (observed TRIAD days have increased from 15 days a year in winter 2009-10 to 35 days in winter 2015-16). This suggests two things: (1) the benefit of avoiding their transmission charges is one that an energy intensive business can readily understand and respond to; and, (2) prospective changes in the future by Ofgem to network charges should be approached in the round - as major changes in approach could significantly impact the current I&C customer demand-side business case.

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

39 When does engaging/informing domestic and smaller non-domestic consumers about the transition to a smarter energy system become a top priority and why (i.e. in terms of trigger points)?

Please provide evidence supporting your views:
Given the comparatively limited ability and willingness of typical customers to engage with flexibility, it may be sensible to focus initially on those with greater ability to engage, ie those who have electrified their heating and/or transport. These early adopters, almost by definition, are more engaged than the average customer.

If you wish to provide any further supporting evidence please attach the relevant file.:
No file was uploaded

Consumer protection and cyber security questions

40 Please provide views on what interventions might be necessary to ensure consumer protection in the following areas:

Please provide evidence supporting your views:
The transition to smarter tariffs potentially creates a number of issues for domestic customers. The transition itself will create winners and losers and so will need to be introduced sensitively. Issues of voluntary versus compulsory changes to tariffs would need careful thought and debate. Given the extent of customer "stickiness" revealed by the CMA's investigation into current electricity prices, more thought will be needed on the topic of customer engagement if smarter tariffs are to have any impact. (See Sustainability First papers "Smarter, Fairer?" (http://www.sustainabilityfirst.org.uk/index.php/other-publications) and a forthcoming paper on sticky customers.

If you wish to provide any further supporting evidence please attach the relevant file. :
No file was uploaded

Please provide evidence supporting your views:
Sustainability First wholeheartedly agrees that personal data privacy must be respected, and supports the broad thinking behind the current Data Access and Privacy Framework. But, smart meter data can also improve the evidence base for public policy. There would need to be appropriate safeguards - but public interest benefits of smart meter energy data also need to be realised (eg better inputs to official statistics and models). (See Smart Meter Data and Public Interest Issues - http://www.sustainabilityfirst.org.uk/index.php/other-publications).

If you wish to provide any further supporting evidence please attach the relevant file. :
No file was uploaded

Please provide evidence supporting your views:
There is considerable opportunity for learning about how to engage customers from the experience of implementing the CMA remedies on electricity prices, and their success or otherwise.

If you wish to provide any further supporting evidence please attach the relevant file. :
No file was uploaded

Please provide evidence supporting your views:
Sustainability First has written extensively on the need to introduce appropriate consumer safeguards as we move to the world of smart energy tariffs and services – and set out what such safeguards might look like in a world of principles-based regulation. (See Sustainability First GB Electricity Demand project papers 12, 8 and 3 - http://www.sustainabilityfirst.org.uk/index.php/gb-elec-demand-publications). It will be important to find the right-balance between avoiding over-regulation of an emerging market in innovative services while ensuring appropriate customer safeguards, in particular for customers in vulnerable circumstances but also for other customers as well (eg avoiding unfair or costly customer 'lock-in' to goods or services).

If you wish to provide any further supporting evidence please attach the relevant file. :
No file was uploaded

Please provide evidence supporting your views:

If you wish to provide any further supporting evidence please attach the relevant file. :
No file was uploaded

41 Can you provide evidence demonstrating how smart technologies (domestic or industrial/commercial) could compromise the energy system and how likely this is?

Please provide evidence supporting your views:
No response

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

42 What risks would you highlight in the context of securing the energy system? Please provide evidence on the current likelihood and impact.

Please provide evidence supporting your views:
No response

If you wish to provide any further supporting evidence please attach the relevant file[2]:
No file was uploaded

Roles and responsibilities questions

43 Do you agree with the emerging system requirements we have identified (set out in Figure 1)?

Not Answered

Please provide evidence supporting your views:
No response

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

Not Answered

Please provide evidence supporting your views:
No response

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

44 Do you have any data which illustrates:

Please provide evidence supporting your views:
No response

If you wish to provide any further supporting evidence please attach the relevant file :
No file was uploaded

Please provide evidence supporting your views:
No response

If you wish to provide any further supporting evidence please attach the relevant file :
No file was uploaded

45 With regard to the need for immediate action:

Yes

Please provide evidence supporting your views:
Through Sustainability First's close involvement with the Power Responsive initiative, it is evident that a better understanding is needed of the transmission / distribution intersect, including, eventually, better alignment of price signals for the power flows at the T&D boundary/grid supply point, and, better alignment of the structure of approaches to T&D charges. See also answer to question 36.

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

Not Answered

Please provide evidence supporting your views:
See response above.

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

Not Answered

Please provide evidence supporting your views:
See response above.

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

46 With regard to further future changes to arrangements:

Not Answered

Please provide evidence supporting your views:
No response.

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

Please provide evidence supporting your views:
No response.

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

Innovation questions

47 Can you give specific examples of types of support that would be most effective in bringing forward innovation in these areas?

Please provide evidence supporting your views:
In practical experience – including among GB pilots and trials - there is a significant gap on how to identify enablers and to tackle main barriers to commercialising the development of demand-side flexibility in the existing commercial and public building stock. In particular, integration of DSR, Building Energy Management Systems, own-generation and storage – from a commercial, institutional and technical stand-point. This would tackle a neglected policy area in terms of GB demand-side flexibility.

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded

48 Do you think these are the right areas for innovation funding support?

Yes

Please state reasons or, if possible, provide evidence to support your answer.:
Sustainability First's GB Elec Demand paper 11 co-authored with Frontier Economics (April 2014 - http://www.sustainabilityfirst.org.uk/index.php/gb-elec-demand-publications) reviewed the experience with the LCNF to date and concluded that, to assist domestic customers more innovation on automated demand-side controls and household-level thermal storage would be valuable.

If you wish to provide any further supporting evidence please attach the relevant file:
No file was uploaded