

## Catalogue of questions

### Removing policy and regulatory barriers - *Enabling Storage*

**1. Have we identified and correctly assessed the main policy and regulatory barriers to the development of storage? Are there any additional barriers faced by industry? Please provide evidence to support your views.**

Chapter 2 highlights a set of issues that are presented as policy and regulatory barriers for storage. However, we do not believe that the issues identified are exclusively applicable to storage technologies. Rather they represent potential distortions that impact on the “exports” and “imports” to or from transmission and distribution networks. These issues could be characterised as follows:

- **Lack of consistency in network connection policies:** The connection policies for the transmission companies are materially different from those associated with the distribution companies. The connection arrangements for transmission may be characterised as “shallow” whereas the distribution arrangements may be characterised as “semi deep” or “shallow” depending on the voltage of the connections. A level playing field is required for these arrangements to ensure consistency of treatment for all technologies (including storage);
- **Differences in cost reflective use of system charging for connection:** There are significant differences in the transmission and distribution use of system charging methodologies which makes it difficult to determine the extent to which the actual tariffs are cost reflective. Both transmission and distribution use of system charging methodologies should be based on same underlying principles over cost reflectivity. This should ensure that costs associated with both imports and exports are appropriately allocated. In particular the methodologies should ensure that users are not charged twice for network infrastructure required to facilitate both export and import;
- **Differing technical requirements:** The transmission and distribution charging methodologies should include similar technical requirements that reflect the characteristics of the particular plant and apparatus (including storage technologies) in line with the EU Network Code requirements. The methodologies and connection arrangements should also allow storage to be added to a site with an existing demand or generation connection. This would reflect the fact that storage could result in a material change of the site characteristics where this may affect the technical characteristics of the site (and impacts on the relevant network security standard). Treatment of storage in these circumstances should be consistent with the connection of new generation or demand within a site;
- **Inconsistent approach to Network Charging:** Transmission and distribution charges should provide locational incentives based on marginal cost reflective signals. These signals should provide information on the avoided cost of network reinforcement (long run incremental cost avoidance). In this context new generation, demand reduction or storage could provide system wide benefits or costs. Recovery of total costs under network tariffs should be implemented in a non-distortive manner and on a fair and equitable basis;
- **Potential distortions in the recovery of consumption Levies:** The recovery of final consumption levies should be implemented to ensure that they do not distort the

electricity market. Cost recovery arrangements should be fair and equitable across all customers (while ensuring that they do not impact materially on vulnerable customers). Furthermore the levies should not result in the potential for double charging associated with site imports and exports; and

- **Clarification of planning arrangements:** With regard to planning, we believe that the arrangements should reflect the principal features associated with storage technologies which are related to the conversion of electricity energy for export onto the total system. The treatment of storage in the planning regime should be consistent with the treatment of other technologies associated with the export of electricity onto the total system.

We support the intention to provide regulatory clarity for storage. However, we believe that storage could be accommodated within the existing arrangements (including the existing generation licence) and that there is no requirement for defining storage within primary legislation.

**2. Have we identified and correctly assessed the issues regarding network connections for storage? Have we identified the correct areas where more progress is required?**

**Please provide evidence to support your views**

The consultation document implies that the connection of storage is somehow different from the connection of demand or generation. We do not believe that this is the case. There are many existing sites with both generation and demand, which result in both imports to and exports from the total system. These sites are required to ensure that there is sufficient capacity on the relevant network to facilitate the required exports and imports in their connection agreements. In addition the sites must comply with the relevant technical parameters associated with imports and exports (network security standards). Storage sites should be treated on the same basis as existing sites which have both generation and demand.

We do not believe that the current arrangements create uncertainties associated with storage. The current arrangements couldn't be more clear for exports and imports. However, as noted above there are arguments for consistency of treatment between transmission and distribution networks (deep versus shallow for example, as noted above).

There may be a case for the procurement of services from sites that can support system operation or that can obviate the need for network reinforcement. Storage is not a special case. However, network companies may need to develop their arrangements to recognise the benefits associated with the activities on certain sites, particularly with regard to the potential for distribution companies to actively control their networks. Distribution companies should be encouraged to undertake a competitive process to procure relevant services from users connected to the relevant network (e.g. frequency response or reactive capability or constraint management).

**3. Have we identified and correctly assessed the issues regarding storage and network charging?**

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

**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.**

The consultation documents states that “*network charging methodologies were not designed with storage in mind*”. We do not believe that this is the case. Network charging arrangements endeavour to create cost reflective charges associated with imports and exports from the relevant network. They should be consistent with the investment drivers associated with the relevant network security standards. For example, transmission investment is associated with both generation and demand under the National Electricity System Security and Quality of Supply Standard (SQSS). Cost reflective charges should recognise the incremental marginal costs associated with generation (exports) and demand (imports) at particular sites. With respect to storage sites, imports and exports from the site may result in incremental costs associated with reinforcements for both the exports and the imports.

The consultation document highlights an issue associated with intermittent or non-intermittent classification. This is somewhat misleading. The issue of the intermittent/non intermittent classification of sites relate to the investment consequences associated with the categorisation of the site. For example, if the site is exporting at the peak and there is a peak charge associated with exports, then it is consistent that the site is exposed to the relevant peak charge (this could include for example an embedded benefit for distribution connected generation). We believe that there may be a case to review the charging arrangements to ensure cost reflectivity (and we have raised CUSC modification proposal CMP271 to consider this issue with regard to demand transmission charges).

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

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

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

**Please provide evidence to support your views.**

Network operators could use a range of providers (including storage) to support their networks. However this requires the development of an appropriate licensing regime for distribution system operation and associated incentive arrangements that are consistent with those applied to the transmission system. We support the development of competitive arrangements for appropriate system support services (which could include storage).

There are no circumstances in which network companies should own storage. To the extent that storage provides exports to the total system or imports from the system, storage facilities compete directly with generation and demand side response. It would introduce serious market distortions if network companies were able to own and operate storage facilities as part of a regulatory asset base.

Further work is required by the network companies to indicate the impact of exports and imports (including storage) actually has on the management of their networks. In some circumstances new exports and imports may enable the avoidance of network reinforcement costs and could be procured by the relevant system operator. It would be easier to develop policy or regulations with more clarity on how or whether increased exports or imports helps the relevant network (and how or whether it hinders them). It would also help to identify whether the particular characteristics of storage (such as fast ramp rates) can facilitate network operation and hence the need for the procurement of a particular service from providers with this capability (including storage operators).

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

**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.**

We do not agree with the assessment of the regulatory approaches to provide greater clarity for storage. There is no need to create a special category of market participation in relation to storage.

The existing arrangements are capable of accommodating storage, where such facilities are subject to a common approach towards connections, cost reflective network charges, removal of double charging of levies and treatment of the facilities as essentially generation (and under the generation licence arrangements). Work needs to be undertaken to amend and modify existing arrangements (particularly the generation licence) rather than trying to create a new category of licensee or a special form of market participant.

We support Government/Ofgem's work to deliver a smarter more flexible energy system. In particular we believe that smart metering has a key role to play. As Ofgem note in their recent Smart metering consultation:

*"Settling customers using their half-hourly consumption data will expose the true cost of supplying that customer in any given half-hour, putting incentives on suppliers to help customers move their consumption to periods when electricity is cheaper (or export in periods when it is beneficial to the system). Half-hourly settlement will therefore:*

- *promote innovation and competition in the energy market*
- *help to create the right environment for more demand-side response (DSR), leading to a more efficient energy system*
- *help suppliers to forecast demand more accurately, strengthening competition and reducing costs*
- *make the settlement process faster and more efficient, reducing barriers to entry to the energy market"*<sup>1</sup>.

In addition, Ofgem "expect that we will need to mandate all suppliers to settle their customers on a half-hourly basis to realise the full benefits"<sup>2</sup>.

The smart metering initiative will help facilitate the deployment of new innovative solutions for demand side energy management, including storage.

**6. Do you agree with any of the proposed definitions of storage?**

**If applicable, how would you amend any of these definitions?**

**Please provide evidence to support your views.**

We note the various technical definitions in relation to storage. However, the current arrangements are based on exporting to the total system (i.e. generation) and importing from the total system (i.e. demand). Since storage comprises both exports and imports then such facilities should be subject to the appropriate cost reflective charging, while ensuring that users are not charged twice. Such arrangements would ensure a level playing field with existing sites that comprise both generation and demand.

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<sup>1</sup> "Mandatory Half-Hourly Settlement: aims and timetable for reform", Ofgem, 11<sup>th</sup> November 2016, page 4 (the Smart Metering Consultation) at [https://www.ofgem.gov.uk/system/files/docs/2016/11/mandatory\\_hhs\\_planning\\_consultation.pdf](https://www.ofgem.gov.uk/system/files/docs/2016/11/mandatory_hhs_planning_consultation.pdf)

<sup>2</sup> Smart Metering Consultation, Page 4

For example:

- The transmission charging arrangements under the CUSC create cost reflective generation and demand charges and these are applied to users that are exporting at the relevant times and importing at the relevant times (this means, for example, that generators can be charged for demand charges if net imports occur in the peak demand (Triad) periods);
- The balancing and settlement code recognises balancing mechanism units that are either classed as exporting (Production) or importing (Consumption)

We are concerned that unjustified discriminatory treatment of storage facilities could introduce significant and material distortions to the existing electricity and capacity markets.

**7. What are the impacts of the perceived barriers for aggregators and other market participants? Please provide your views on:**

- ☐ **balancing services;**
- ☐ **extracting value from the balancing mechanism and wholesale market;**
- ☐ **other market barriers; and**
- ☐ **consumer protection.**

**Do you have evidence of the benefits that could accrue to consumers from removing or reducing them?**

We note the perceived barriers for aggregators and other market participants as set out in the consultation document. We believe that the potential barriers should be reviewed in the context of the market as whole. It is important that there is a level playing field, particularly in relation to the provision of balancing services and participation in the balancing mechanism.

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

With respect to the perceived barriers for aggregators in the Consultation Document we have the following comments:

**Balancing Services:** We are concerned about the procurement processes adopted by National Grid with regard to balancing services. Recent experience suggests that the balancing services market is becoming increasingly fragmented, with the system operator procuring specific new services which are limited to certain providers. There should be a small number of well-defined products procured by the system operator using open and transparent processes. Implementation of Project TERRE (Trans European Replacement Reserves Exchange), which includes demand side participation, should be prioritised as a first step in the development of the balancing service market in line with the EU Network Codes.

**Cross-Party Impacts:** We recognise the issues identified with respect to cross party impacts. Work underway under Project TERRE will provide a blueprint that will enable demand side participation in the balancing market (for example it will address issues such as the adjustment of supplier imbalances).

**Barriers to the Balancing Mechanism and wholesale market participation:** It is essential that there is a level playing field that enables all parties (including larger parties with economics of scale) to participate in the balancing mechanism and the wholesale market.

We support initiatives such as creating a new category of BSC party and the potential for aggregators to be responsible for bidding into the balancing mechanism, subject to compliance with the requirements under the Grid Code and the wider EU network Codes. The Project TERRE work under BSC Modification Proposal P344 will help to develop the thinking in this area.

**Other Market Barriers:** We support the development of the capacity market to facilitate demand side participation and the work associated with the potential creation of system operators for the distribution network.

**Consumer Protection:** We do not believe that there is a case for regulatory intervention in respect to demand side participation and aggregation. Market solutions will emerge in this area and we are concerned that Government/Ofgem intervention could stifle competition. It is likely that the customer will maintain a relationship with suppliers when providing aggregation services, and that suppliers will remain regulated businesses under the terms of their licences.

**9. What are your views on the pros and cons of the options outlined in Table 5? Please provide evidence for your answers.**

Table 5 provides a useful summary of the potential options available to address the potential barriers to market participation and consumer protection. Our preference is for an industry lead process, building on the work associated with Project TERRE. We do not believe that there is a case for regulatory intervention since industry led change is capable of delivering the required modifications.

**10. Do you agree with our assessment of the risks to system stability if aggregators' systems are not robust and secure? Do you have views on the tools outlined to mitigate this risk?**

Providers of aggregation services should be required to comply with the requirements of the Grid Code and network security provisions. In particular secure communication systems as required by the Grid Code must be a condition of service provision.

**Providing price signals for flexibility - System Value Pricing**

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

The key driver for flexibility is the price of electricity in the wholesale electricity market. It is important that the signals are reflective of the costs. We welcome recent changes to electricity cash out which have significantly sharpened the price signals (including the move towards a single marginal cash out price).

We do not believe that there is a specific price associated with “flexibility” and we are concerned about the proposals to involve the System Operators and Distribution Network Owners in this “market”.

Clearly the introduction of smart meters and a move towards half hourly settlement will facilitate access to the market for new entrants. In addition, we expect new innovative solutions will emerge through competition in the electricity market. These solutions will include smart tariffs and smart technologies, including within the homes of domestic customers.

**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? Where do you see the most attractive opportunities for combining revenues and what do you see as the main barriers preventing you from doing so?**

RWE is a significant provider of flexibility both at the transmission system level and in distribution networks. There are no significant and material barriers that prevent us from accessing and combining revenue streams.

We are concerned that the ancillary services market is increasingly fragmented by the System Operator, significantly distorting the level playing field and creating inefficiencies. It is essential that there is a level playing field for all market participants and that parties compete to provide services on an equal basis. We are concerned about arrangements that are potentially discriminatory.

We support initiatives such as Project TERRE which are based on creating standard products which can be provided by diverse service providers, including non-traditional sources of flexibility.

**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? What is preventing you from capturing the full value of these benefits?**

As an existing provider of flexibility we do not believe that there are significant benefits of the technologies that we provide which are not currently remunerated or which are undervalued. However, we are concerned that certain parties may receive benefits that significantly influence investment decisions which are not available to all parties. This includes, for example, demand charging arrangements which significantly over reward embedded generation during Triad periods.

**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 role in making these changes?**

The work that is being undertaken as part of Project TERRE in respect of aggregator participation is an important initiative that will enable the efficient use of flexibility. Project TERRE is the first stage of wider integration of balancing markets in line with the EU Network Codes.

**Providing price signals for flexibility - Smart Tariffs**

**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.**

We do not believe that the Government and Ofgem should play a role in promoting smart tariffs or enabling new business models in this area. Smart meters and the associated settlement arrangements offer the opportunity for innovative new competitive business models to emerge. Essentially the move towards smart technologies will facilitate these new models and it for the market to determine the relative merits of competing approaches. We are concerned that Government/Ofgem intervention in the area of smart metering and technologies may stifle competition and produce ineffective or inefficient solutions. However, it is essential that the key building blocks are implemented (new metering systems and

associated settlement) to facilitate the development of the competitive smart market. The current governance arrangements provide opportunities for the industry rules to evolve further and enable innovation in the smart world, without further regulatory intervention.

**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.**

Subject to the introduction of smart metering and settlement, we do not believe that it would be appropriate for Government/Ofgem to take further action to drive the market.

**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?**

There is important evidence regarding the deployment of smart meters tariffs in a number of other countries. In particular, smart tariffs have been introduced in Australia (state of Victoria)<sup>3</sup> and Italy<sup>4</sup>. There is wide public acceptance of the technology and it is starting to deliver the anticipated system improvements. However, a fully competitive smart market is some way off, while the deployment of associated smart technologies and tariffs remains at an early stage in GB.

It is important to note that the GB market operates under a different set of rules from those applying in most electricity markets. However, it is uniquely placed to facilitate the development of innovative new solutions in the competitive energy supply market. Furthermore, the implementation of the EU Network Codes in the electricity market will help to develop standard approaches and business models that can be implemented across markets.

**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. Have we missed any?**

We recognise the reasons identified for why suppliers may not offer or why larger non-domestic consumers may not take up, smart tariffs. However, we believe that the deployment of smart metering and the development of competition in the electricity market will drive innovation and new business models. This will help to address customer inertia and introduce new opportunities for customers to benefit from better management of electricity consumption.

**Providing price signals for flexibility - Smart Distribution Tariffs - Incremental Change**

**19. Are distribution charges currently acting as a barrier to the development of a more flexible system? Please provide details, including experiences/case studies where relevant.**

While there have been important improvements in the derivation of distribution charging methodologies (such as the CDCM) there is no doubt that the resultant tariffs are complex and confusing. Consequently, distribution charges may act as a barrier to the development of a more flexible system. We believe that there are a number of reasons for this including divisions of customers into voltage levels and the potential conflicts that occur between

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<sup>3</sup> See for example: <https://www.energyaustralia.com.au/faqs/residential/flexible-pricing-plan-information>

<sup>4</sup> See for example: [http://www.enel.fr/en\\_gb/telegestion.aspx](http://www.enel.fr/en_gb/telegestion.aspx)

tariffs that are targeted on system operation activities (such as peak of time of use tariffs) and the elements of the tariffs designed to recover costs (such as standing charge tariffs).

**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?**

There are a number of simple incremental changes that could be implemented to improve the cost reflectivity of distribution charges to overcome the barriers that have been identified. In particular work is required to disentangle distribution tariffs into three key components :

- Those that reflect the cost of system operation (mainly kWh tariffs);
- Those that reflect the locational marginal signals (mainly capacity tariffs); and
- Those that reflect the recovery of the distribution networks allowed revenue.

As a first step we believe that it is important to differentiate the system operation activities of the distribution network owners from the network ownership activities. A model based on the transmission system could be adopted, with system operation essentially associated with the running of the network from the system ownership which represents the long term investment in the distribution network assets.

**21. How problematic and urgent are any disparities between the treatment of different types of distribution connected users? An example could be that in the Common Distribution Charging Methodology generators are paid 'charges' which would suggest they add no network cost and only net demand.**

If we are to deliver enhanced flexibility it is essential that the issues associated with distribution tariffs are tackled as soon as practicable. In particular it is important to identify cost reflective signals so that, for example generators are paid tariffs where costs are avoided (for example avoided costs of investment), but may incur charges where costs increased (for example in relation to system constraints). In addition, it is important that the cost recovery arrangements do not dilute or distort the locational signals. The changing methodology should be developed to more appropriately signal the value of flexibility on distribution networks.

**Providing price signals for flexibility - Smart Distribution Tariffs – Fundamental Change**

**22. Do you anticipate that underlying network cost drivers are likely to substantively change as the use of the distribution network changes? If so, in what way and how should DUoS charges change as a result?**

This question is framed incorrectly. Distribution charges should comprise three elements: cost reflective system operation charges, cost reflective locational signals and non-distortive cost recovery charges related to allowed revenue. Distribution tariffs will evolve in response to changes in use by customers and investment decisions.

**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? Should they do so? And if so, how?**

Distribution tariffs should comprise three key components :

- Those that reflect the cost of system operation (mainly kWh tariffs);
- Those that reflect the locational marginal signals (mainly capacity tariffs); and
- Those that reflect the recovery of the distribution networks allowed revenue.

End user tariffs should include the distribution charges and the pricing signals from the wholesale electricity market. This would ensure, for example, that users have an incentive to reduce consumption at times of peak demand, or indeed increase consumption when electricity is cheap. Cost reflective distribution tariffs must include tariffs related to energy prices to provide the most efficient solution for end use customers.

**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**

We support separation of distribution system operation from distribution network ownership. This separation will facilitate the development of efficient network management in both the short term and the long term. The separation would also facilitate the introduction of cost reflective distribution charges the comprise:

- Those that reflect the cost of system operation (mainly kWh tariffs);
- Those that reflect the locational marginal signals (mainly capacity tariffs); and
- Those that reflect the recovery of the distribution networks allowed revenue.

**Providing price signals for flexibility - *Other Government Policies***

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

Existing Government policies have an important influence on the market for flexibility. For example the capacity market has been designed to encourage participation of demand side resources. We believe that Government policies should ensure that energy and capacity markets operate on a non- discriminatory basis, provide a level playing and ensure that market distortions of any intervention are minimised or time limited. Interventions such as support for renewable energy should be delivered in a way that does not foreclose the market for flexibility (for example, both the renewables obligation and the CFD arrangements are designed to facilitate participation in the electricity market).

**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?**

We do not believe that significant changes are required to the CM application/verification processes in the near term. Storage and DSR can currently participate in the CM and it is important that the CM is designed in a manner that is technology neutral. We do not believe that there is a case for change in the capacity market related to the future smart systems development.

**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?**

The most important change that is required is the development of cost reflective distribution tariffs that properly relate to the costs of system operation, the costs associated with network investment and fair and equitable recovery of the network allowed revenues.

### **A system for the consumer - *Smart Appliances***

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

- **Yes**

We agree with agree with the 4 principles for smart appliances set out in the Consultation Document (interoperability, data privacy, grid security, energy consumption).

**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 select below which options you would like to submit evidence for, specify if these relate to a particular sector(s), and use the text box/attachments to provide your evidence.**

- ☐ **Option A: Smart appliance labelling**
- ☐ **Option B: Regulate smart appliances**
- ☐ **Option C: Require appliances to be smart**
- **Other/none of the above (please explain why)**

We do not have any evidence in favour of or against any of the options set out to incentivise/ensure that the principles associated with interoperability, data privacy, grid security, energy consumption are followed.

**30. Do you have any evidence to support actions focused on any particular category of appliance? Please select below which category or categories of appliances you would like to submit evidence for, and use the text box/attachments to provide your evidence:**

- ☐ **Wet appliances (dishwashers, washing machines, washer-dryers, tumble dryers)**
- ☐ **Cold appliances (refrigeration units, freezers)**
- ☐ **Heating, ventilation and air conditioning**
- ☐ **Battery storage systems**
- ☐ **Others (please specify)**

We do not have any evidence to support actions focused on any particular category of appliance.

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

Clearly technology is evolving rapidly in the area of smart technologies and we expect further innovation in this area.

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

We do not believe that specific intervention is required for particularly classes of customer. We note in the context of distribution charges that the impact of cost recovery on certain classes of customer may require consideration in constructing fair and equitable arrangements to ensure that the network owners can recover their allowed revenue.

## **A system for the consumer - Ultra Low Emission Vehicles**

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

We believe that the role of the Government is to facilitate the connection of electric vehicles, through cost reflective connections arrangements (see above). Provided that the appropriate building blocks are in place, innovative solutions will appear in the competitive market. Incentive arrangement, for example in relation to system operation for the network operators may create new opportunities to exploit the storage capability of electricity vehicles.

### **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:**

- ☐ **control or shift of electricity consumption during vehicle charging; or**
- ☐ **utilisation of an electric vehicle battery for putting electricity back into homes, businesses or the network?**

Electric vehicles are essentially another form of storage. The key driver for flexibility from storage is the price of electricity in the wholesale electricity market. It is important that price signals are reflective of the costs. We welcome recent changes to electricity cash out which have significantly sharpened the price signals (single more marginal cash out).

We are confident that new innovative solutions with respect to storage will emerge through competition in the electricity market. These solutions will include smart tariffs and smart technologies, including in relation to electric vehicles

We are concerned that unjustified discriminatory treatment of particular types of storage facility (such as electric vehicles) could introduce significant and material distortions to the existing electricity and capacity markets.

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

Fuel cells are simple another form of storage. We would expect the market to deliver the most cost effective solution to deliver efficient flexibility to the electricity market.

Storage of renewable energy may require further consideration with respect the Government support arrangements.

## **A system for the consumer - *Consumer Engagement with DSR***

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

We have no evidence with respect to how large non-domestic consumers currently find out about and provide DSR services. However, we expect the competitive electricity market would enable the discovery of market opportunities where non domestic consumers are key providers of new or innovative services.

**37. Do you recognise the barriers we have identified to large non-domestic customers providing DSR? Can you provide evidence of additional barriers that we have not identified?**

We note the barriers to large non domestic demand side response identified in the consultation documents. While we support greater participation by demand side participants in the electricity market we remain concerned about initiatives such as the Power Responsive campaign launched by National grid. As we have noted elsewhere in this document, we believe that procurement of services by system operators should be based on open and transparent basis, with procurement of standard products and the opportunity for all market participants to provide bids into competitive allocation processes. We believe that the current arrangement carry to risk of significantly fragmenting the market, with consequent inefficiencies.

**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?**

We believe that the role of Government/Ofgem is to facilitate arrangements that enable all market participants to play on a level playing field. In this context, the role of distribution system operation and network ownership requires further consideration, together with cost reflective charging and appropriate incentives on the relevant licensees.

**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)?**

We believe that the roll out of smart meters and the associated customer engagement will provide the process for informing domestic and smaller non-domestic consumers about the transition to a smarter energy system. Given the opportunities for innovative new solutions to emerge we would expect that the market will respond to this change and that there is limited need for Government/Ofgem intervention.

**A system for the consumer - *Consumer Protection and Cyber Security***

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

- ☐ **Social impacts**
- ☐ **Data and privacy**
- ☐ **Informed consumers**
- ☐ **Preventing abuses**
- ☐ **Other**

The existing licencing arrangements provide sufficient safeguards to ensure customer protection, data privacy, preventing abuses and cyber security. The competitive market arrangements should ensure that customers are informed as to the potential transformation to a smart electricity system,.

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

We have no evidence demonstrating how smart technologies (domestic or industrial/commercial) could compromise the energy system.

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

We would highlight the need to ensure that the necessary changes to industry rules and licences occur to ensure the integrity of settlement systems when smart metering is deployed.

**The roles of different parties in the system and network operation**

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

We agree with the emerging system requirements identified by the Government/Ofgem.

**44. Do you have any data which illustrates:**

- a) the current scale and cost of the system impacts described in table 7, and how these might change in the future?**
- b) the potential efficiency savings which could be achieved, now and in the future, through a more co-ordinated approach to managing these impacts?**

We do not have any data that illustrates (a) the current scale and cost of the system impacts described in table 7, and how these might change in the future and we do not have any data on b) the potential efficiency savings which could be achieved, now and in the future, through a more co-ordinated approach to managing these impacts.

**45. With regard to the need for immediate action:**

- a) Do you agree with the proposed roles of DSOs and the need for increased coordination between DSOs, the SO and TOs in delivering efficient network planning and local/system-wide use of resources?**
- b) How could industry best carry these activities forward? Do you agree the further progress we describe is both necessary and possible over the coming year?**
- c) Are there any legal or regulatory barriers (e.g. including appropriate incentives), to the immediate actions we identify as necessary? If so, please state and prioritise them.**

We agree with the proposed roles of DSOs and the need for increased coordination between DSOs, the SO and TOs in delivering efficient network planning and local/system-wide use of resources.

We believe that changes to industry licences and relevant rules are required to deliver to DSO role. In particular the distribution charging arrangements require reform to reflect the role of system operation to introduce cost reflective locational signals and new arrangements that allow the network owners to recover costs in a fair and equitable manner.

We do not believe that there are any legal or regulatory barriers (e.g. including appropriate incentives), to the immediate actions we identify as necessary.

**46. With regard to further future changes to arrangements:**

**a) Do you consider that further changes to roles and arrangements are likely to be necessary? Please provide reasons. If so, when do you consider they would be needed? Why?**

**b) What are your views on the different models, including:**

**i. whether the models presented illustrate the right range of potential arrangements to act as a basis for further thinking and analysis? Are there any other models/trials we should be aware of?**

**ii. which other changes or arrangements might be needed to support the adoption of different models?**

**iii. do you have any initial thoughts on the potential benefits, costs and risks of the models?**

We believe further changes to existing roles and arrangements are required, particularly with respect to distribution system operation where an economic and efficient solution is required. This could include a wider role for the existing transmission system operator, particularly with respect to network coordination and system optimisation. We would support an open and transparent procurement mechanism for system operation based on market participants competing to provide standard products on a level playing field. These products should enable energy and system balancing across both the GB transmission system and distribution networks. Network operators should be able to resolve all system requirement through this process including resolution of national or local constraints.

## **Innovation**

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

We believe that Government/Ofgem and existing market participants can play a role in facilitating the creation of new opportunities for enhanced flexibility. However, it should be for the market to bring forward solutions, and for the market to determine the efficient and economic solutions. Subject to creating a level playing field, Government/Ofgem should be less prescriptive and allow the market to deliver solutions

**48. Do you think these are the right areas for innovation funding support? Please state reasons or, if possible, provide evidence to support your answer.**

We do not see the need for specific funding support to help catalyse further innovation. We are concerned that the Government/Ofgem may be “picking winners” . We believe that the market should be allowed to develop and deploy innovative solutions in response to cost reflective market signals.

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