

RESPONSE TO FLEXIBILITY CALL FOR EVIDENCE

[Responses submitted on 6 January 2017 via online response tool]

Question 1 to 6 - removing policy and regulatory barriers – Enabling Storage

ELEXON agree with your assessment of the main policy and regulatory barriers identified in the consultation. ELEXON is supporting the developments of electricity storage through continuous dialogue with storage providers and energy market participants. We advise on how settlement can support new technologies and to identify where changes may be required to the Balancing and Settlement Code (BSC). From a settlement point of view the challenges may be different according to the size of the storage device and whether it is connected to the transmission or a distribution network or within a premise.

There are natural incentives for the metering of large scale storage devices connected to transmission or distribution networks. This should ensure these installations receive the financial benefits of participation in the energy market and for their volumes to be adequately accounted for in settlements.

Enabling small scale storage benefits and flexibility services

The same incentives do not currently exist for smaller scale storage and electric vehicles within premises that export energy onto the distribution network. Export capable metering has been less available and less likely to be installed in these premises, however with the introduction of smart metering this will change. In order to allow for the participation of batteries in flexibility services adequate metering that captures import and export information would be required. This information would allow suppliers, aggregators and other parties to offer services based on actual usage and to be settled accurately on this flexibility service. One possible solution is for smart meters to be configured to record the export from smaller sites to increase visibility of exported volumes. However, changes requiring the export to be settled would need careful consideration that balances any impacts this may have on the 'prosumer' with the benefits that could accrue from the ability to sell their export to a third party Supplier of their choice. A de-minimis capacity level for export settlement requirements could be set to avoid potential impacts on very small prosumers.

ELEXON observes that, if export information of smaller sites is not available to the market and there is no clear accountability of storage exports, this will lead to issues for the market akin to the issues currently with microgeneration. Microgeneration export is not required to be metered or registered for settlement. This leads to the issue of export 'spill', where export that is not metered appropriately is 'spilled' into the market at unknown quantities and times. The lack of transparency causes issues for Suppliers in forecasting. It also creates barriers to Half-Hourly Settlement (HHS) because the inaccurate allocation of exported energy to Suppliers (through a BSC process called Grid Supply Point (GSP) Group Correction¹) can lead to an underestimation of their non-half hourly customer usage and therefore reduce incentives to move these customers to HHS. This issue was discussed by the ELEXON lead work through the expert group the [Settlement Reform Advisory Group \(SRAG\): See SRAG03/01A](#). ELEXON estimated the level of export spill in 2015, which indicated that up to 1 Terra Watt hour (TWh) of export spill was already entering the networks at that time.

The issue of export metering for both storage and microgeneration will require careful consideration, so as to realise the benefit to consumers/prosumers and the market of accurate metering, while recognising the right of consumers to decide to whom they sell their export, and the potential cost overhead of metering very small export volumes.

¹ GSP Group Correction Factors (GGCFs) are used to ensure that the total energy allocated to Suppliers in each Settlement Period (30 minutes) in each GSP Group (Distribution region) matches the energy entering the GSP Groups from the transmission system, adjoining GSP Groups and through embedded generation. In every Settlement Period this difference between total demand in a GSP Group (adjusted to losses) and GSP Group Take is dealt with by applying a correction factor (the GSP Group Correction Factor, GGCF) to the demand of all non-half hourly metering systems. The factor is such as to make the total demand in the GSP Group (which is the aggregate of the volumes that will enter Settlement) equal to GSP Group Take.

RESPONSE TO FLEXIBILITY CALL FOR EVIDENCE

Therefore, ELEXON recommends that regulatory requirements around metering of storage and storage related premises should be aligned with those of micro-generation sites and settlement requirements tightened to ensure accountability and transparency within the market. This should be considered alongside the current issues associated with micro-generation.

Network Charging

If smaller sites are required to have storage export metered than this can be rewarded through network charging structures. Currently, only a single unit rate 'generation' tariff is available. Changes are in train ([the Distribution Connection and Use of System Agreement \(DCUSA\) Change Proposal 268 'Distribution Use of System \(DUoS\) Charging Using HH settlement data'](#)) to make these tariffs three rate (red, amber, green) but more flexible tariffs could be designed to encourage storage to be charged or discharged at the time of greatest benefit to the market.

Double Counting

We agree with BEIS and Ofgem's proposals to look at the issue of double counting as a barrier to Storage. The volumes of energy used in charging the various levies are derived from metered data collected and aggregated under the BSC. We therefore believe that changes to the BSC are likely to be required, in order to allow electricity imported by storage to be distinguished from other imports. ELEXON would be best placed to identify the appropriate BSC changes in this area and we invite BEIS/Ofgem to work with us to understand the options for change.

Storage definitions

The requirements placed upon Storage will need to take into account the size, type and location of the storage devices and where on the system they are connected (transmission network or distribution network). It is important to ensure any potential regulatory obligations would not inadvertently limit different types of storage from providing services, such as demand side participation, in the future. For example, electric vehicle batteries could be charged or discharged to provide services but may require different regulatory definitions due to the fact that these batteries can be physically moved between premises.

Question 9 Aggregators

ELEXON believes that the issue of allowing aggregator's access to the Balancing Mechanism (BM) is already starting to be addressed through industry-led change.² For example, National Grid and other market participants are preparing for the introduction of the European Union Electricity Balancing Guideline, the latest draft of which includes specific requirements relating to participation by the aggregation of demand facilities. The expert Workgroup for BSC Modification Proposal P344 '[Project TERRE implementation into GB market arrangements](#)' is considering how best to allow aggregators to register 'Virtual BM Units', and to adjust supplier imbalance positions to take into account the acceptances issued to them. It is possible that the workgroup's solution will allow aggregators to participate in the BM, but even if it does not we would expect it to solve many of the associated technical problems, and therefore lay the groundwork for a future Modification Proposal that did open up the BM. These issues will become clearer in February 2017, when the Workgroup issues the first of two planned Assessment Procedure Consultations on P344. We invite BEIS to participate in the workgroup meetings to develop a greater understanding of the issues under consideration.

Question 11 Providing Price Signals for Flexibility – System Value Pricing

ELEXON believes that there would be significant value in a centralised mechanism or platform where BSC and other parties can source or view available service offerings (as set out by market participants in the future). There would also be benefit in a centralised source of half-hourly metered data, which would allow both aggregators and service

² Participation by aggregators is already possible currently, however this requires them to be a BSC Party or work with a BSC Party.

RESPONSE TO FLEXIBILITY CALL FOR EVIDENCE

users (National Grid, Distributors and Suppliers) to verify that flexibility had been delivered. This service could be provided by a centralised Data Aggregation function within the settlement process provided meter level data is available to settlement (please see our response to [the Ofgem consultation on Mandatory HHS](#) for more details).

Question 15 Providing Price Signals for Flexibility – Smart Tariffs

Potential new business models are constrained by the current Supplier-hub model where data is collected and aggregated by Supplier Agents³ for use in settlement and DUoS Billing. Centralised data collection and aggregation models could resolve some of these issues. Policy and regulatory changes could be introduced by the Government and Ofgem to ensure energy data availability and provisions are more flexible for parties that require it for their business models (as set out in our response on [mandatory HHS](#)). This would help community energy schemes and other non-traditional business models who are looking to net off consumption and generation data, which the existing system struggles to accommodate. The data privacy framework will need to balance the needs of the consumers with the need for data to support more flexible offerings. The current arrangements require customers to opt-in to allow access to their data. This requirement could constrain the development of such schemes if data is required for their design.

Question 18 Providing Price Signals for Flexibility – Smart Tariffs

We recognise the barriers identified and agree that smart meters, HHS and the removal of tariff restrictions will be the key enablers to the provision of smart tariffs. We believe that previously the perception has been that HHS is for larger customers. ELEXON has undertaken work (started 2010) with expert groups from industry, government/regulator and customer representative bodies to unlock the benefits of new technology and advances in metering with changes to the wholesale electricity market and settlements. The [Profiling and Settlement Review Group \(PSRG\)](#) looked at moving larger customers to mandatory HHS which resulted in BSC Modification P272 'Mandatory Half Hourly Settlement for Profile Classes 5-8' which is currently moving approximately 155,000 customers to HHS. The PSRG also undertook a Cost Benefit Analysis of moving smaller customers to HHS which indicated that parties considered HHS to be optimal in the longer term. [The Settlement Reform Advisory Group \(SRAG\)](#) identified changes to facilitate elective HHS which are currently being implemented. These changes include new approaches to getting half-hourly data into settlement via Suppliers. ELEXON believe that once Suppliers are comfortable with HHS for smaller customers, they will look to develop strategies to maximise the benefits of smart tariffs for these customers. In addition, new types of market participant may look to introduce smart tariffs as part of their business model to offer, and support, services such as demand side response, electric vehicle charging or for accommodating on site generation.

Question 19 Providing Price Signals for Flexibility - Smart Distribution Tariffs, incremental change

ELEXON considers the existing charging mechanisms are a barrier to a more flexible energy system. The existing tariff structures are static and cannot mix certain types of data (e.g. domestic and non-domestic). Furthermore, they do not allow for consumption and generation data to be netted (community energy schemes and other Non-Traditional Business Models (NTBMs) are looking to do this). However, some potential changes in train may help to some degree, e.g. DCUSA Change Proposal 268 'DUoS Charging Using HH settlement data'. We address this below in our response to questions 20 and 21.

Question 20 and 21 Providing Price Signals for Flexibility - Smart Distribution Tariffs, incremental change

³ The supplier hub requires electricity suppliers to appoint three different types of Supplier Agent to a metering system; a Meter Operator, Data collector and a Data Aggregator (not to be confused with the concept of an 'aggregator' who brings together energy volumes to trade)

RESPONSE TO FLEXIBILITY CALL FOR EVIDENCE

The changes proposed under DCP268 'DUoS charging using HH Settlement Data' will make an incremental improvement if implemented. This change will rationalise the tariffs into a smaller number and provide for three rate tariffs (red, amber and green or red, yellow and black for unmetered supplies) for all customer types for import and generation (export). However, tariff rate times will still be fixed and only vary by season and day of week and these will need to be more flexible and recognise more dynamic energy tariffs and usage in order to maximise the benefits of and enable a more flexible market. For example tariffs that reflect peak price events could be used to encourage demand response at those times.

Question 22 Providing Price Signals for Flexibility - Smart Distribution Tariffs, Fundamental change

We believe that introducing more 'dynamic' DUoS tariffs or payments that allow the tariff rate times to vary in response to system conditions would require new infrastructure and charging methodology changes. However, at this point we think more work needs to be done to determine if there is a business case for such dynamic tariffs. A barrier to uptake of dynamic DUoS tariffs is that Suppliers, rather than the Distributor, have the direct relationship with the consumer. Additionally, smart meter control and signalling is via the Supplier. Hence, if such dynamic tariff offerings are developed by parties, such as Distributors or aggregators, then mechanisms would be required to signal to consumers either through the Supplier operated smart meter or some other new method. Offering services through the Supplier would require that the Supplier be able to communicate the new tariffs to customers, given their existing customer facing role they may be better suited to this than a Distributor.

ELEXON has previously investigated the changes required to market arrangements (including DUoS and settlement changes) from the transition from the current [teleswitched service to smart metering](#). Teleswitch services allows suppliers to switch large numbers of non-smart meter tariff registers and loads (e.g. storage heating), this service will be no longer available once smart meters are rolled-out. ELEXON's investigation concluded that HHS was required for dynamically switched smart meters. Smart meters will introduce dynamic load and register switching capability, as such changes will be required to allow the settlement of consumption data for these meters. Another consideration is that Distributor constraints are often localised and as such dynamic offerings may only be required for certain sections of their networks. This means any 'one size fits all solutions' may not be appropriate and a more localised solution may need to be considered. The costs of implementing such changes will need to be considered against its benefits. These kinds of arrangements could encourage local and community energy scheme uptake which allows local generation to be sold to local customers but should also encourage the development of services to address system constraints.

Question 25 Providing Price Signals for Flexibility – Other Government Policies

ELEXON strongly believes it would be beneficial if more of the exported energy from distributed generation was both metered and registered for settlement. As indicated in our response to question 1-6, the requirements for exporting storage should also be aligned with those for distributed renewables. The unmetered spill from these installations is causing problems for both Suppliers and settlement. The process which accounts for and re-distributes the export spill (Grid Supply Point (GSP) Group Correction Factors) results in cross subsidies whereby the export spill is allocated to Suppliers in proportion to their allocated import within the distribution region.

Another policy issue is the Data Privacy Framework which requires Suppliers to get consumers to opt-in to HHS if the consumption data granularity from the Meter is less than daily. This has the potential to constrain mandatory HHS approaches and the development of flexible service offerings to consumers. Suppliers will need access to sufficient HH data for different market sectors to design appropriate smart tariffs. Perhaps, such anonymised data can be provided to market participants for this purpose. Otherwise, Suppliers will only have access to consumer data within their own portfolio and only where the customers have opted in to provide such data.

Question 33 and 34 – A system for the consumer – Ultra Low Emission Vehicles (ULEVs)

ELEXON has been monitoring developments with ULEVs. We recently provided a consultation response to the department of Transport on their [ULEV consultation](#) on ultra-low emission vehicles measures for inclusion in the

RESPONSE TO FLEXIBILITY CALL FOR EVIDENCE

Modern Transport Bill. In this consultation response we highlighted some issues for consideration in respect of the ability of EVs to provide balancing services:

- EVs are not considered to be 'Trusted Devices' under the smart meter arrangements. As such they cannot currently be controlled by Suppliers via any auxiliary load controllers (ALCs) via the smart meter. This issue could be resolved by changing the Smart Energy Code (SEC) to make EVs 'Trusted Devices';
- Only Suppliers can directly access the smart metering. So, although a distribution business, aggregators or National Grid could send demand response signals to EV owners they cannot directly control such load via the meter. However, such access could be implemented through binding EV control to the Consumer Access Device (CAD) or by other means of communication (e.g. the internet). Changes may be required to the SEC to allow other parties to control EV loads via the smart meter;
- ELEXON is currently putting in place requirements around the ability to collect half-hourly metering data from smart meters. However, there are currently no requirements to meter or register 'Active Export' (energy passing from the home/business back to the grid) data for electricity settlement. This information may be required as 'proof of delivery' for any demand side actions, undertaken by EV owners, where the vehicle load is discharged; and
- There are also data privacy issues to be considered in accessing granular meter data from domestic customers. Currently, customers in domestic premises have to give explicit permission to access such data. However, as there is likely to be an incentive for the customer to share the data (e.g. payment for exporting energy) this should not be a barrier to innovation.

We also highlighted innovative approaches we are looking at to accommodate on-street charging of EV where they are metered via a 'movable meter' attached to the EV charging cable.

Questions 44, 45 and 46 – The roles of different parties in system and network operation.

ELEXON has been contacted by a number of parties (such as [Energy Local](#)) looking at local and community energy schemes. We have sought to help these parties understand the current market arrangements and what potential changes could be considered to remove any barriers. Many of these schemes seek to locally match customers to generation. There are several recurring barriers to development of these arrangements:

- DUoS charging arrangements currently have charging structures that keep domestic/non-domestic and consumption/generation separate. So any models looking to 'net' generation from consumption face a barrier from these charging structures;
- Local schemes seek to include customers from multiple Suppliers, however, data is aggregated by Supplier for settlement and DUoS billing. Hence, the current arrangements make the 'ring fencing' of data from these schemes problematic. This drives such schemes to use a single Supplier which then causes issues for any scheme participant that wants to change Supplier;
- Where a local scheme could provide 'netting' of consumption and generation data to create a 'virtual' unit, for example, via a 'pseudo MPAN' (a non-physical MPAN set up to aggregate sub-meter consumption) the scheme member would be required to use sub-metering rather than 'real' MPANs. This issue potentially creates a lack of visibility for DNOs/ DSOs and potential issues for scheme members with metering faults; and
- Currently, the settlement arrangements need to aggregate data to GSP Group level. This means that any local scheme that has participants in more than one GSP group would need to separate any consumption data by the GSP group that the participants are in. This means netting of consumption across GSP group boundaries can only happen at trading party level (i.e. after netting of Balancing Mechanism (BM) Unit data at account level).

RESPONSE TO FLEXIBILITY CALL FOR EVIDENCE

Potential changes to allow aggregators to register 'Virtual BM Units' for Modification Proposal P344 may go some way to addressing the issues above, by allowing consumption and generation from multiple Suppliers to be aggregated into a single BM Unit, in order to facilitate aggregator access to Project TERRE (and potentially the Balancing Mechanism).

Additionally, the development of the HHS arrangement may also provide a framework for addressing some of the data aggregation issues described above in the future.

Questions 47 and 48 Innovation

ELEXON believe that a clear policy (and commercial) framework is required to deliver the potential significant benefits of Demand Side Flexibility (DSF) to the end consumer. This framework would aim to establish new market arrangements, which would coordinate the needs and interactions of the many different DSF actors and technology; customers, suppliers, aggregators, Distributions Network Operators (DNOs), Transmission System Operator and other new types of participant. We have held this belief for a number of years and it has been a theme in our response to all previous consultations in this area by National Grid on [DSR](#) and Ofgem on previous work under the work stream of Smarter Markets.

We suggest that, subject to a suitable business case, a work programme is established which sets out a robust structure which develops and implements new DSF trading arrangements and to deliver DSF benefits to customers. It should give all interested parties the opportunity to participate in the process (this could be similar to the Review of the Electricity Trading arrangements (RETA) which brought about the BSC arrangements). ELEXON considers that the models put forward in the consultation are not mutually exclusive to each other, however they are unlikely to develop unilaterally. For example, new shared infrastructure would be required for 'Local Units' to submit bids and offers as suggested in your consultation (see *Figure 2: Illustrative range of potential models for further changes to arrangements to support efficient use of local/system-wide resources*). Therefore, an overarching program of work would be beneficial to ensure individual issues (and changes) are not considered (or developed) in isolation to the detriment of the common goal of a smarter and more flexible energy system.