Smart Metering Implementation Programme

A call for evidence on privacy and data access (August 2011)

Logica's response to questions

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Response to Questions

Question 1: Please submit any further evidence, such as surveys or consumer research, regarding privacy issues and smart metering. In particular is there evidence available about the effects of the availability and aggregation levels of more granular data (for example daily)?

Whilst not directly related to smart metering, we believe Private Lives: a people's inquiry into personal information by Peter Bradwelland published by DEMOS provides some real insights into the maturity and pragmatism with which the public view the security of their personal information.

Question 2: To what extent would different rules for access to data between suppliers and third parties be expected to impact on the development of an energy services market (in terms of product and tariff innovation and / or entry to the energy market by third parties)? What are the particular data uses to which these concerns apply?

We believe that the customer should ultimately decide who should have access to their smart metered data and that this access should be extended to third parties, if so desired by the customer. In our experience of having developed the Smart Office (a blueprint for the IT required for a supplier or energy services company (ESCO) to differentiate themselves in a smart retail market), access to half-hourly data is essential to the process of defining new products and services. It allows suppliers to segment their consumers based on consumption patterns, identify non consumption-based distinguishing characteristics for each segment and design Time of Use (ToU) tariffs that offer a win-win proposition for both consumer and supplier. An inability to access half-hourly consumption data will, in our view, seriously restrict the development of smart ToU tariffs and undermine the Government's Impact Assessment.

Question 3: Are there any data uses, apart from those set out below, where the arrangements for access to data could have an impact on the benefits of the programme. How does this analysis differ for the gas market?

In our opinion, there are a range of benefits to be realised through access to smart metered data. The granularity of data required varies depending on the benefit. As outlined in our response to question 2, consumption data at the granularity of the wholesale market (i.e. half-hourly for electricity, daily for gas) is, in our opinion, essential for designing commercial smart services such as ToU tariffs that benefit both the consumer and the supplier. In contrast, debt management services may only require daily or weekly access to consumption whilst a "balance on demand" service may only require the ability to read the meter in response to a customer-initiated balance request.

Our current work with WPD on their 2011 LCNF Tier 2 bid (FALCON) is investigating the value of historic half-hourly consumption data from domestic and non-domestic customers to better model constraints on the 11kV network. As part of this proposed work, we are, however, also exploring whether this granularity can be achieved using existing read frequencies and industry processes.

We note that ELEXON is currently consulting on the costs and benefits of moving Profile Class 1 to 4 consumers to half-hourly settlement. Should the results of the consultation suggest this is not justified, we would still suggest that half-hourly smart metered data could be used to improve the current Non Half Hourly (NHH) profiles. Currently, these

profiles are based on half-hourly data obtained from special meters installed in only 2,500 premises; however, the rollout of smart meters provides a opportunity for significantly increasing this sample size.

As discussed above, smart commercial service offerings are likely to require a granularity of data aligned to the wholesale market. Unless the gas market moves to sub-daily balancing, daily readings are likely to be sufficient for designing smart gas services.

Question 4: What types of energy services and energy advice could be provided by the market (by suppliers and / or ESCOs / potential new entrants) that require access to specific levels of data?

What level of data granularity (frequency, time-lag) are needed to provide such services and what is the potential impact of these services in terms of percentage energy savings?

Please provide empirical examples and explain the basis of any assumptions and distinguish between gas and electricity.

We believe that smart meter data and functionality will provide a new catalyst for retail competition which will see the development of innovative new energy products and services as suppliers and ESCOs attempt to differentiate themselves. The work we have done in developing the Smart Office (the IT landscape required to enable suppliers and ESCOs to maximise the value of smart meter data and functionality) has demonstrated the potential for smart metering to enable suppliers to better understand and service their customers (e.g. ToU tariffs, debt management services, enhanced customer engagement etc.). We also note that some suppliers are moving beyond half-hourly consumption at premises information and assessing the value of appliance level information to enable more insightful energy products and advice (e.g. the projected annual savings from replacing an appliance).

In supporting DNOs with their LCNF Tier 2 bids, we're aware that there is still much trialling to be done and learning to be derived on DNO usage of smart meters and data from investment planning to grid operation. Although we partially understand the value that smart metered data can provide to a DNO and the potential for better outage detection and restoration, the value of smart meter-enabled active domestic demand side management (DSM) has yet to be trialled. Results from such trials would help to scope the potential market for DSM-related energy services and how such a market could be accessed by consumers, suppliers, DNOs, transmission operators and others. There may also be other, as yet unrealised, benefits to be discovered.

The emergence of low carbon technologies (e.g. Electric Vehicles (EVs) and heat pumps (HPs)) will further drive new product and service development for suppliers, DNOs and third parties.

The granularity of data required to support smart services will depend on the service offerings. As a general rule of thumb, developments of commercial service offerings are likely to require a granularity of data that aligns with the wholesale market. Data may be required at premises, circuit (e.g. E7) or appliance level, depending on the service being offered. Use of smart metered data in the context of smart grids may range from historic access to granular data for planning purposes (i.e. half-hourly for electricity, daily for gas) to near real time notification of events on the HAN for, say, demand side management of EVs).

In our experience, current smart metering trials have yet to exploit the real potential of smart meter data and functionality. We have been pioneering the Smart Office concept for over two years now and, whilst attracting much interest, customers of our Smart Data Service are more focused on the logistics of managing a smart rollout at scale rather than differentiating themselves with new energy services and products in a new smart retail market. We believe it will be at least another eighteen months to two years before we start seeing Smart Offices being implemented operationally, hence it is difficult to provide empirical evidence of smart data usage. We can, however, list some of the usages that we have included in our Smart Office Proofs of Concept and have discussed with DNOs in the context of future LCNF trialling:

- formulating Time of Use tariffs for specific customer segments (half-hourly);
- debt monitoring and notification (daily);
- dynamic domestic Demand Side Management (dynamic multi-rate ToU plus near real time events);
- network investment modelling (half-hourly);
- day ahead dynamic tariffs (dynamic multi rate ToU);
- consumer-initiated self-service balance requests (real time ad hoc);
- tailored ToU tariffs and energy advice (half-hourly consumption at appliance level).

We see the data and functionality that smart meters provide as a major catalyst for innovation and differentiation within the energy sector, a view epitomised by our Smart Office concept. Whilst we have listed some of the obvious usages above, we would expect to see many more smart products and services developing over the next two to three years.

Question 5: Should theft management be considered a regulated duty for which suppliers should have access to a certain level of smart metering data? What level of data would be required and how would this be used to manage theft? Please provide practical examples.

We do not have any evidence to provide that would be useful in answering this question.

Question 6: Does data need to be collected from all customers all of the time, for theft management, or could there be a trigger for accessing more detailed data (for example where theft is suspected)?

The frequency and granularity of data collected will depend on the theft management strategy being deployed. In our role as a smart data service provider, we do not have visibility of theft management strategies. We would note, however, that smart meters are capable of generating tamper alarms that could be used to as a trigger for instigating

more focused monitoring. To give some indication of the prevalence of tamper alarms, we have provided some statistics from our Smart Data Service.

The smart meter portfolio we currently support generates 65 different meter events and alarms, 13 of which could indicate some form of meter tampering. Over the 6 years that we've operated our Smart Data Service, we've received over 106 million in-bound messages from smart meters. A little over 4.4 million of these messages (i.e. 4%) contained meter alarms/events and less than 1% of the alarms/events that we have received are of the type that may indicate some form of tampering (i.e. 0.03% of in-bound messages). All alarms/events are forwarded to the relevant supplier but, unfortunately, we have no information as to how many of the 35,000 potential tamper alarms were followed-up or, indeed, resulted from energy theft.

Question 7: What level of take-up of time-of-use tariffs could be expected under different scenarios for access to data? What information is needed to design time of use tariffs? In particular would sample or anonymised data be sufficient?

We do not have any evidence to offer in terms of rates of ToU tariff uptakes. We have, however, been assisting suppliers with analysis of half-hourly electricity consumption profiles with a view to designing ToU tariffs. We recommend that suppliers use at least a year's worth of data (to allow for seasonal variations) from as large a population of consumers as possible to increase the statistical validity of the results. The initial stage of the analysis we have performed to date uses anonymised data in that consumers are segmented purely on their consumption behaviour. This analysis can be used to identify, for example, "peaky" or "off-peaky" consumer groups. Further analysis can then identify non consumption-related characteristics of consumers belonging to each group (characteristics that could, for example, be used in marketing to new customers whose consumption profiles are not available to the supplier). We have had preliminary discussions with some suppliers concerning the use of appliance-level consumption data to recommend and monitor interventions for maximising the consumer benefit of a ToU tariff (e.g. running dishwashers/washing machines overnight). We see this as an intermediary step towards smart homes in which the home hub automatically controls appliances based on the consumer's preferences and the ToU tariff.

Question 8: Do you agree that individual half-hourly data is not currently required for suppliers to meet their obligations in relation to settlement? Over what timescale are any changes to settlement likely to take place and what might the implications be in terms of data requirements?

Clearly, access to half-hourly data is not required for a supplier to meet its current settlement obligations, however, we note that ELEXON is currently consulting on the costs and benefits of moving Profile Class 1 to 4 consumers from non half-hourly (NHH) to half-hourly (HH) settlement. In our view, NHH settlement is fit-for-purpose for static ToU tariffs and basic dynamic ToU tariffs (e.g. the day-ahead French Tempo tariff) but a move to HH settlement should be considered for more dynamic tariffs which are likely to coincide with the emergence of smart homes.

If HH settlement is mandated for Profile Class 1 to 4 consumers with smart meters, we can expect a gradual migration from NHH to HH settlement over the course of the rollout. If, however, migration is at the discretion of the supplier

and driven by smart products and services, there may well be a need for a Bulk Change of Measurement Class process similar to the Bulk Change of Agent process and the impact on settlement may be more pronounced.

Any move to HH settlement will have an impact on those remaining on NHH settlement. As the number of NHH settled consumers reduces, we can expect more volatile GSP Group Correction Factors which may, at some point, justify a move from the current settlement profiles to some form of residual profiling. As outlined in our response to question 3, such a move would be an obvious extension to the replacement of current NHH sampling with smart metered data.

Question 9: How far would aggregated or sample data provide suppliers' with what they need in the area of wholesale hedging? Please provide examples of how the data would be used and where possible quantify potential benefits and costs.

We note that the use of smart metered data for wholesale hedging is inextricably linked to the issue of whether smart metered premises continue to be settled non half-hourly (NHH) or are moved to half-hourly (HH) settlement. Under current NHH settlement, suppliers are incentivised to forecast the HH consumption of their NHH customers as deemed by NHH settlement (i.e. the customers' settlement profile consumption), rather than their NHH customers' actual profile consumption. Under these arrangements, accurate periodic readings (e.g. monthly) are probably sufficient to forecast future Estimated Annual Consumptions (EACs). Were Profile Class 1 to 4 consumers to move to HH settlement, suppliers would be incentivised to forecast actual half-hourly consumption, generating a need for half-hourly consumption data.

Question 10: What level of data would be required and how would this be used to manage debt? Please provide practical examples.

The granularity of data required to manage debt is dependent on the supplier's approach to debt management using smart meters. This covers a wide spectrum from running the smart meter in pre-payment mode (i.e. managing debt on the meter) to calculating account balances based on periodic meter readings, comparing against pre-defined thresholds and taking appropriate actions (e.g. automated customer notification, manual intervention by debt management staff etc.). In our Smart Office proof of concept (see response to question 2), we have implemented example processes that combine smart metering and back office functionality to support debt management processes. In these processes, the frequency of smart meter reads was configurable depending on the customer and the extent of their debt (e.g. daily, weekly, monthly). We are in discussions with several suppliers regarding the provision of such smart meter-enabled debt management processes for small business customers.

Question 11: How would suppliers envisage using daily data to support debt management and what evidence do they have to support claims of additional savings that could be achieved with access to daily data as opposed to less frequent data?

We do not have any evidence to provide that would be useful in answering this question.

Question 12: How could smart metering data be used to identify and protect vulnerable consumers? Should such activity be considered a regulated duty and are any licence changes needed to create particular duties on suppliers in this area?

As a prospective Data Service Provider, we do not believe that it is appropriate for us to comment on changes to suppliers' licence conditions. We note, however, that smart metering could enable suppliers to monitor the energy consumption of vulnerable consumers, ensuring, for example, that they were receiving adequate heating during periods of cold weather by flagging those consuming below a designated threshold (which could, itself, be temperature-related).

Question 13: Do you consider that use of data by network companies to support them in maintaining an efficient and economic network should be considered a regulated duty?

As regulated bodies, network companies should strive to deliver fit-for-purpose networks that meet customer demand in the most cost-effective manner whilst complying to agreed safety standards. We believe that, particularly in the case of electricity network operators, smart metering has a major role to play in this. In Low Carbon London, we are providing UKPN with pseudo DCC access to smart metered data to help better understand the role that smart metered data will play in enabling smart grids. We are also looking to develop future LCNF projects that explore the role of smart meter functionality within smart grids, particularly focusing on smart meter-enabled active domestic demand side management (DSM). Active domestic DSM (i.e. automated near real time remote control of domestic load) is likely to be a key enbler for the anticipated uptake in low carbon technologies (e.g. electric vehicles, heat pumps etc.).

From our experience of working with the DNOs, it is clear that the part that smart meters will play in enabling smart grids is still evolving. As such, we don't believe that it is appropriate at this stage to mandate their use, nor restrict DNO access to smart meter data and functionality, especially in the context of LCNF trialling. As with the smart meter-enabled products and services being developed by suppliers, innovation should be encouraged in the use of smart meters by network operators, something that Government initiatives such as LCNF and RIIO are helping to achieve.

Question 14: Do you agree with the requirement for such data to be anonymised or aggregated wherever possible, and how should this be monitored?

In our LCNF work to date with DNOs, domestic consumption data by premises (identified by Meter Point Administration Number) is sufficient to enable modelling of power flows and voltages across the DNO's network. This offers a degree of anonymisation in that there is no need to associate this consumption data with details of the customers living at the premises. With the advent of smart grids and a new smart retail market, commercial relationships between the DNO and the customer should not be ruled out. However, we would assume that any such relationship (e.g. some form of active demand side management arrangement) that requires additional customer details would be entered into on a voluntarily basis by the customer.

Question 15: Would suppliers be expected to advise consumers of network company usage of data given network companies do not have a direct relationship with customers?

In the case of electricity, we note that all consumers, including domestic, have a connection agreement with distributors that includes the National Terms of Connection (NTC). Currently, this connection agreement is frequently concluded through the electricity supplier, acting as an agent for the distributor. We could see how this precedent of an energy supplier acting as agent for a network company could be extended to obtaining consent for data usage.

Question 16: Are there any alternatives to a basic opt-in or opt-out approach to consumer choice such as some form of prompted choice? What are the practical and consumer protection considerations in relation to different options(for example when and how)? From a consumer perspective what alternative approaches and vehicles (for example letter, email, phone) to seek customer consent are there?

As a prospective Data Service Provider (DSP), we note that the DSP is unlikely to have any direct relationship with end consumers and, as such, is unlikely to be involved in obtaining consumer consent for smart meter data access. We would note, however, that smart metering provides a catalyst for suppliers to utilise a wide variety of channels for communicating with their customers. In our Smart Office proof of concept, we have demonstrated how business process management (BPM) can be used to combine functionality from smart meters with that of existing web service-enabled back office systems to provide automated smart products and services. The example processes that we demonstrated included automated two-way communication with end consumers using several communication channels (e.g. IHD, email, text messaging, iGoogle gadgets etc.), the intention being that consumers were free to choose their preferred channel or channels depending on the nature of the communication. We believe this approach, in which the consumer has a choice, is likely to be better received than mandating a single communications medium.

Question 17: What evidence is there of likely take-up rates that could be achieved through different approaches to consumer choice?

The European Commission co-funded Concerto Initiative Sustainable Energy Systems in Advanced Cities published its final report on creating energy efficient behaviour in December 2010 (http://www.concerto-sesac.eu/IMG/pdf/Deliverable_WP_2_1c_rev.pdf). The report covers some of the aspects of promotion and marketing that raise awareness and create community understanding and engagement in the programme. We believe this programme can provide some positive signals around how to engage consumers and, in doing so, increase their receptiveness to making positive choices in respect of taking up the opportunities created through smart meters.

Question 18: What current and future technical options exist for energy consumption data minimisation / privacy enhancing technologies? How might aggregated or anonymised data be provided in practice? Would this imply additional services to be provided by DCC?

In terms of technology, we adopt a security-by-design approach to developing solutions that are required to hold and process sensitive data. This approach, which we've used in implementing large scale public sector projects involving highly sensitive personal data, identifies data that is deemed to be sensitive and then puts the appropriate security and controls in place to ensure that it is transferred, stored and used in a physically and electronically secure environment. Encryption is invariably used at some point in the data life-cycle. However, not all data has to be held in an encrypted form, providing the appropriate controls are in place to establish a "safe area".

In terms of minimising the sensitive data that the DCC holds, we note that the DCC is not required to hold any customer data and the minimum site data that it requires is supply point administration numbers (i.e. MPANs and MPRNs). However, based on our experience of providing our Smart Data Service during Foundation, we would advocate that the DCC also holds site addresses. We recognise that the combination of consumption data, MPANs/MPRNs and site addresses constitutes highly sensitive information (for example, it is possible to determine when a site is vacant). However, in our experience, having access to site addresses is invaluable for a Data Service Provider when supporting meter installations as it allows the Data Service Provider to determine whether the right meter is being installed at the right location (data quality issues resulting from site/meter mismatches are a common problem in the industry today and one which it is hoped that the smart meter rollout can help to address). We also note that, as and when the DCC takes on the role of registration, it will be required to hold site addresses. The systems supporting the DCC should, therefore, be designed with this in mind.

We believe it is feasible for the DCC to provide additional services for supplying suitable anonymised data to authorised users, although this will require the DCC to retain smart meter data, albeit in anonymised form. For example, the DCC could provide suppliers with average consumption profiles by postcode to assist in identifying abnormal consumption patterns which may be attributable to non-technical losses (this particular example does, of course, rely on the DCC holding site addresses). Only holding anonymised data for specific purposes will place constraints on the lead time required for the DCC to deliver new anonymised data services as it will not be possible to start collecting data until the service has been defined. In the example given above, it would take a year from completion of the design and implementation of the service before the DCC was able to offer seasonal average profiles. If the DCC were to retain the raw consumption data (for example, if and when the DCC takes on the role of data processing), anonymised services could be delivered soon after they were specified.

Question 19: What parts of the privacy policy framework do you think should be delivered by regulation and why?

As a prospective Data Service Provider, we do not feel it appropriate to comment on these regulatory matters.

Question 20: What is the most effective way to set out any sector specific protections around privacy (e.g. licence conditions or other alternatives)?

As a prospective Data Service Provider, we do not feel it appropriate to comment on possible changes to licence conditions.

Question 21: What practical options for authentication would provide the right balance between allowing easy access to consumer data in the home while providing the necessary privacy protection? Are there any other issues or options that the programme should be considering in developing the approach in this area?

We do not have any practical examples to provide. However, we would note that, given the SMIP's previously stated principles of 'Privacy by Design' and 'Security by Design', we would expect all options to be subject to a security and privacy impact assessment as part of a comprehensive technical assessment.

Question 22: Are there other issues that need to be considered to make using the HAN a viable route for access to data in the home, from either a process or consumer perspective?

We think that traceability records need to be available on request by users of all local access to data from the HAN, particularly given that this could be achieved via a number of local bridging devices (provided possibly when people move house) or maybe a hand held service device, etc.

Question 23: What sort of arrangements would provide an appropriate balance between providing ease of access for consumers seeking to sign up to new services and adequate protection for consumers' data when accessed via DCC? Do you have any suggestions for alternative approaches?

Users should be able to gain access on demand to DCC records of who has been given access to user data via specific DCC requests.

Question 24: Are there other issues or options that the programme should be thinking about for the Foundation Stage or for non-domestic customers to facilitate access to data?

We do not have anything further to raise.

Question 25: Do you have any suggestions as to how the Foundation Stage can be used to further learn about our approach to data access and privacy?

As a prospective Data Service Provider, we do not envisage the DCC or its service providers being involved in the issues of consent. We note, however, that Foundation Stage smart meter trials provide a good opportunity for testing consumer opinion and concerns around data privacy and trialling different methods of obtaining consumer consent.

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