British Gas

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DECC Consultation on the second version of the Smart Metering Equipment Technical Specifications

British Gas response
8th October 2012

Executive summary

1. British Gas welcomes the Consultation and sees it as a positive step forward for the programme objectives of completion by 2019 and full interoperability of smart metering systems.

2. We agree with the criteria used in reaching the critical decisions on the Application Layer and Physical Layer for the Home Area Network. We support the conclusions reached.

3. We welcome the Government's preference for procurement and ownership of the communications hub to be by the appointed Communications Service Providers. We think this provides the optimum alignment of accountability and expertise. We are concerned, however, at the suggestion that all installation and maintenance costs should be borne by suppliers. We see this as sensible for the initial installation, where costs are known and no additional single-purpose visit is required, but not for subsequent visits to repair or replace. It is important that accountability for any hub failures resides with the CSP and that suppliers do not have an open-ended commitment for the labour costs to replace any that go wrong.

4. We encourage DECC to ensure that the incentives are in place for CSPs to deliver the technical solution that delivers the best value for customers. That will place a premium on safety, reliability and connectivity. Dual-band communications hubs will provide operational benefits for suppliers and connectivity advantages for consumers, but may cost more for CSPs. The procurement criteria must take a holistic view of costs and benefits, or be specified in contracts and regulations to drive the optimum outcome.

5. We see merit in DECC specifying dual-band communications hubs as the industry standard. We expect that, without intervention, the market would deliver the same outcome, but specification by DECC would deliver an industry standard earlier, removing uncertainty and thereby reducing risk and cost.

6. We note the interest of some suppliers in developing an 'intimate' communications hub, but see this as a low priority and a variant that is certainly not on any critical path. We believe that the standalone unit has the advantages of being suitable for all installations, takes virtually the same time to install, is easier to replace, supports future innovation and miniaturisation and avoids all unnecessary questions about connectivity/interoperability.

7. We support the intent of the proposed obligations for 'fit-for-purpose' installations but remain uncertain over enforcement arrangements. An electricity installation may be fit for that purpose but unfit for a subsequent gas installation without a dual-band communications hub. Since these are not yet available it is important that any obligations take account of what is technically possible at the time of the installation.

8. We support the conclusion that no overarching interoperability licence condition is required, as market incentives and equipment specifications will deliver the required outcome. The proposed operational licence conditions are consistent with the delivery of benefits to customers by ensuring they have access to the data that differentiate smart meters. We agree that customers with SMETS1 metering equipment are entitled to the same provision but the Government must be wary of introducing obligations that are dependent on features that are unique to SMETS2 (e.g. interface for Consumer Access Device).

9. We agree with the proposals for certification of metering equipment and believe that the market will undertake rigorous testing to deliver interoperability assurance.

10. We do not think the safety case has yet been made for confirmation of the re-enablement of gas supply at anywhere other than the meter. We do not support its inclusion in the specification of the Pre-payment Interface Device.

11. We support the proposed governance arrangements and transition to sub-groups under the Smart Energy Code.

> **Question 1.   Do you have any comments on the criteria used in the evaluation of the application layer standards?**

1.1.   Yes we agree with and support the criteria used by DECC in reaching their conclusion.

1.2.   There are additional criteria that are relevant and which support the conclusions reached:

    a.   Sources: The standard should be available from open sources, fit-for-purpose for deployment in Great Britain

    b.   Financial viability: Are there are chipsets available at costs that are close to the those used in the IA?

    c.   Change management: Amendments to the standard, if required, should be via open forum (through the Zigbee Alliance or DLMS User Association) as this allows for future innovation and inclusion of GB functionality.

> **Question 2.   Do you agree with the proposal to adopt ZigBee SEP / DLMS as the HAN application layer standards for GB?**

2.1.   Yes we agree with the proposal to adopt Zigbee SEP and DLMS.

2.2.   We think Zigbee SEP 1.x (SSWG implementation) should be adopted as we do not expect SEP 2.x to be suitable for the GB application. This is due to the overheads associated with using internet protocol as the network layer and the consequential impact on the life of the battery in the gas meter.

2.3.   We support the development of a companion specification but further consideration of the governance arrangements will be required to manage future iterations and any changes between SMETS versions.   We support the use of industry working group outputs such as SSWG (Smart Specification Working Group) as this standardisation work

is leading the way with regard to producing compliant SMETS products.

2.4.   Correction is needed on the general architecture of the protocols in use to align with the SSWG architecture, i.e. Zigbee 2.4GHz/868MHz HAN with gas meter/IHD using SEP 1.x, HES to EM using DLMS tunnelled over Zigbee.

Question 3.   Do you agree that equipment should be required to comply with SMETS and a GB Companion specification for ZigBee SEP / DLMS?

3.1.   Yes, we agree that equipment will need to comply with SMETS. The SSWG members are already developing a companion specification for SMETS 1 compliant equipment which could be used by DECC as a sound basis for the GB Companion Specification.

3.2.   The phased release of SMETS, which we fully support, opens the possibility for SMETS 1 metering equipment to be compliant with the SMETS but not with the GB Companion Specification, which does not yet exist. We believe that all meters need to be compliant with SMETS and that products procured from the point at which the SMETS 2 companion specification is complete should also be tested for interoperability. Suppliers with a significant portfolio of SMETS 1 metering systems should not need to run a large scale firmware upgrade to the new companion specification for meters that are already SMETS 1 compliant. This would create an unnecessary risk of upgrade failure and should only be undertaken if a SMETS 1 meter requires replacement to ensure interoperability.

3.3.   It is expected to take 12 – 18 months from completion of SMETS 2 for a suitable companion specification to be finalised and for compliant products to become available. Accreditation/certification regimes must acknowledge that there will be a lead time required to adapt products that can be tested against the specification. It cannot be assumed that products will be compliant soon after the companion specification is published (for example, SMETS 1 was published in Q1 2012, the companion specification should be available in Q1 2013, compliant products available in Q2/3 2013).

Question 4.   Do you agree with the overall approach proposed in relation to the HAN physical layer? If not, please provide a rationale and evidence for your position.

4.1.   Yes, we agree that both 2.4GHz and 868MHz solutions will be required. We accept that the approach could lead to a range to technical solutions being deployed, so we agree that more intervention by DECC may required to drive a consolidated industry position.

4.2.   In our experience of installing several hundred thousand 868MHz devices, there were operational limits for the in-home propagation of IHDs which do not exactly match the 95% coverage (theoretical maximums) that the HAN trial concluded could be achieved. We do not have any empirical data to show exactly what proportion of UK homes would be affected, as we have avoided attempting installations in the 'problem' properties. Nonetheless, it is clear that 2.4GHz will not be suitable for 100% of installations.

4.3.   Approximately 18% of British Gas customers live in an apartment or flat so it is important that the trial of a wired HAN solution is progressed promptly. We are pleased that this is now being progressed. The costs are unclear for the optimum PLC solution and until DECC has concluded the technology trial in Q1 2013, this solution should be kept to the 5% of high rise buildings.

4.4.   We are unclear why there would be £700m-£800m of additional costs from use of 2.4GHz alone as the methodology used to derive this figure is not stated, but we do agree that there is a case for an alternative CSP communications hub that is dual band (with the 868MHz connection for the gas/IHD) . We are cautious over suggestions that 868MHz should be adopted as a 'universal' solution for wireless HAN. It is inevitable that there will be multiple devices in the field operating at different physical frequencies and it is critical that

a.   New technological developments are not stifled
b.   Future deployments embrace backwards compatibility as a fundamental criterion

The dual band hub satisfies these principles. It avoids the operational and logistical complexity that could result from a single frequency or a binary choice, and reduces risk to customer experience from failed or problematic installations.

4.5. Supporting 2.4GHz in the long term will enable SSWG compliance, with full interoperability testing completed in readiness for DCC go live. It will also support agreement of the security approach and enable the industry to progress with work to make 2019 achievable for sites where 2.4 GHz is not suitable.

Question 5. Do you have any comments on the criteria used in the evaluation of the physical layer of the HAN?

5.1. We agree with the criteria used in the evaluation.

5.2. British Gas believes that a solution based on 868MHz exclusively would be operating at maximum capacity, given a changing security environment. The theoretical maximums (given the new 802.15.4g standard) can cater for the data throughput but operating a network at near full capacity and at scale is not advisable.

5.3. We agree that no evidence is presented on interference in the 868MHz band but remain sceptical that this would never be an issue if all residential properties were to be fitted with several devices, all using an 868MHz radio. The Programme needs to own and manage this interference risk, from the perspectives of smart metering interference, tamper opportunities and in-home devices.

5.4. We believe that the other layers should also be considered in the evaluation of options. There is a risk that new 4G networks, when operating at full capacity, could interfere with 868MHz radios and, while this may not become a material issue, it shows the importance of being able to cater for in-band interference, something that 2.4GHz radios handle well.

5.5.   Given all these potential issues, the only weakness of 2.4GHz is its in-home propagation. British Gas believes that it still presents the best overall compromise and should be the primary HAN, with dual band communications hubs providing an infill solution for gas meters that are unable to connect using 2.4GHz. Infill solutions for communications hubs to IHDs will be concluded in early 2013 under the DECC PLC technology trial.

5.6.   The final, critical concern with 868MHz is that it could take three to five years to have a solution available at scale in the market. This will put significant strain on suppliers' confidence in the available technology to cover 100% of properties.

Question 6.   What are your views on the compatibility of the reserved spectrum 870-876MHz with 868 MHz and the value of considering the use of this band?

6.1.   A dedicated spectrum in the 870MHz – 876MHz, compared to using an unrestricted band such as 868MHz, could provide benefits from in-band interference and more suitable duty-cycle regulation. However, it would not offer any greater in-home propagation, bandwidth capacity, or shorten development time.

6.2.   A dedicated spectrum would solve the capacity issue that could materialise from the 1% duty cycle associated with 868MHz that. A dedicated spectrum provides the opportunity to relax duty cycle restrictions and, provided the spectrum can be secured by DECC, it would represent a better technical solution.

6.3.   There are no proven interference issues at 868MHz but we are open to the advice of radio experts on whether a reserved spectrum would offer advantages here. Our understanding is that the costs for dual band communications hubs are unaffected by the choice of second frequency.

> **Question 7.   Do you consider that additional measures should be taken to encourage the development of an 868 MHz solution?**

7.1.   Considering the Government figures of 70% coverage of UK homes using a 2.4GHz solution, and a PLC/alternative solution covering the 5% of high rise properties, there is a 25% void that will be filled using a mixture of RF and PLC.   There will be a market pull for infill solutions but this is not, by itself, sufficient to produce an interoperable solution.   We agree that an 868MHz solution for the UK should be progressed and have supported the new work items recently raised through the Zigbee Alliance.

7.2.   The complexity with a Zigbee 868MHz link to a gas meter only is significantly less than for the full HAN implementation (CAD/IHD/HHT/Electricity meter/micro-gen meter) and the supported objects, network functions, and trust model would be easier for industry to deliver if a dual band hub were supported.

> **Question 8.   Do you agree with the approach to allow the market to determine the balance between 2.4 GHz and 868 MHz?   If not, please provide rationale and evidence.**

8.1.   2.4GHz is the only available interoperable solution until an 868MHz solution is developed.

8.2.   Whether a dual band or single band solution is progressed, product development could take until 2016, by which time 2.4GHz will be prevalent and widespread.   An infill connection to gas meters would require the dual band communications hub and we would expect such a solution to be adopted quickly by all suppliers active in installations. If a single band 868MHz solution were progressed then we would expect take up to be slower.

8.3.   We are in no doubt that a decision to support dual band hubs would facilitate the quickest route to 100% coverage of UK homes, reduce operational / logistical complexity and deliver interoperability for 2.4GHz and 868MHz devices.   That is the

outcome that we would expect if it were left to the market to determine the balance between the two frequencies but, for the removal of commercial uncertainty, would support the inclusion of this as a specified requirement of CSP- provided communications hubs.

Question 9.   What are your views on the costs and benefits of the three options identified for deploying wireless solutions (i.e. 2.4 GHz as the default; dual-band communications hubs; or market led)?

9.1.   Our view on this is driven from what looks most sensible intuitively, but is subject to more rigorous assessment of the costs of the three options. The first, to make 2.4GHz the dominant standard, is the most likely outcome in the short term. DECC is anticipating that 95% of homes will operate with a wireless HAN and we expect 2.4GHz to meet the needs of 70% of properties. It is available today and will be used for all Foundation deployments. The problem comes from the potentially high cost of aborted visits to the 25% of premises where it provides insufficient propagation as (although some visits can be deferred through questioning the customer) suppliers do not know exactly where these properties are.

9.2.   The dual-band hub would overcome this and, from an installation perspective, is an attractive prospect. We are not the best-qualified to comment on the estimated cost premium of £2.50 per unit but, at the volumes required, would expect a lower sum to be attainable. It would also allow manufacturers to market a single model covering all RF requirements. Even at a premium of £2.50, if only 5% of installations could not proceed using 2.4GHz and resulted in aborted visits, the additional costs of dual-band would be broadly justifiable. Given the expectation that 30% of installations will not be possible with 2.4GHz alone, a 5% abort rate does not seem an unreasonable assumption for the business case. We can also anticipate efficiency gains in logistics if there were a 'one size fits (nearly) all' communications hub used across the industry.

9.3.   The market-led approach allows flexibility and spreads the risk of a wrong decision, without necessarily avoiding one. On balance, we see merit in mandating a standard

dual-band solution therefore, but it would be prudent to conduct a more rigorous analysis of the costs and benefits ahead of this.

9.4. There is a potential separation of costs and benefits if the higher cost communications hub is procured by the CSP but the installation benefits are enjoyed by suppliers. DECC must ensure that CSP-ownership of the hub incentivises the procurement of the solution that is optimal for the programme and for customers.

Question 10. Do you agree with the proposal for a 'fit for purpose' installation obligation on suppliers?

10.1. We support the intent of a 'fit for purpose' installation obligation and see how it should minimise customer inconvenience and contain costs. However, we are very unclear on how it would be enforced, since all cases in which the installation is regarded as 'unfit' would in effect be a dispute between suppliers. Given that 868 MHz or dual-band hubs will not be available for some years, our preference is for the obligation to be on the first supplier to install the 'best available solution', taking account of the additional requirements of dual fuel premises and any additional devices that a consumer might reasonably be expected to connect. Whilst still subject to differences of opinion between installing suppliers (and potentially between consumers and suppliers) it would be less subjective than assessment of what is fit for purpose.

10.2. During Foundation and at the beginning of mass roll-out only 2.4GHz solutions will be available. When alternatives are installed, it is important (and expected) that the architecture will avoid complexity from the introduction of a new HAN frequency by ensuring (for example) that a dual-band communications hub is compatible with a 2.4 GHz gas meter.

Question 11. Do you have any views on the proposed approach to developing a wired HAN solution?

11.1. It is urgent that this work is progressed urgently and we had hoped for it to be concluded in 2012. This will not be possible but we are pleased that this being mobilised and is excepted to conclude in Q1 2013. A wired HAN has long been considered as a required option for communications between smart metering equipment as, without it, suppliers will be unable to install a working smart metering system in all property types. Some jobs will be deferred and (worse) others will be aborted, at significant cost and inconvenience to customers and suppliers. We are concerned that what should be a transformational, positive experience for customers could easily turn negative and drive a jaundiced perception of the Programme.

11.2. Our initial thoughts are that, for Foundation and the early stages of DCC operation, a PLC bridge will be needed to run the Zigbee application to the premises where it can then be broadcast. DECC should specify that the PLC or alternative RF solutions should carry the Zigbee/DLMS protocols.

11.3. For the enduring solution this 'bridge' could be included within the CSP communications hub and therefore reduce the installation and operational complexity. Alternatively, shared infrastructure could be installed into tall buildings (especially for new builds) that would then be available for all suppliers to use.


Question 12. Do you agree with the proposed scope of functional requirements for a communications hub? Are there any other functions that should be included and what would be your rationale for including those functions (including estimated costs and benefits)?

12.1. We agree with the proposed scope of functionality.

12.2. We suggest that the end-to-end solution should be considered when translating from one message type to another. If the communications hub is merely a pass-through of

commands from the HES, then processing overheads, complexity and unit costs of the communications hub are all reduced.

Question 13. Do you have views on the specification for an 'intimate' interface between electricity meters and communications hubs?

13.1. To facilitate an open, fair and competitive market, gas suppliers need the ability to install smart gas meters without being dependent on the actions of (and information from) an electricity competitor. DCUSA modifications are currently being progressed to allow gas suppliers to install a stand-alone communications hub that can support single-fuel gas and dual-fuel consumers. This uses the same principle as a stand-alone hub: the only modification is a mounting bracket, or 'hot-shoe', that allows a mains connection before the dumb electricity meter:
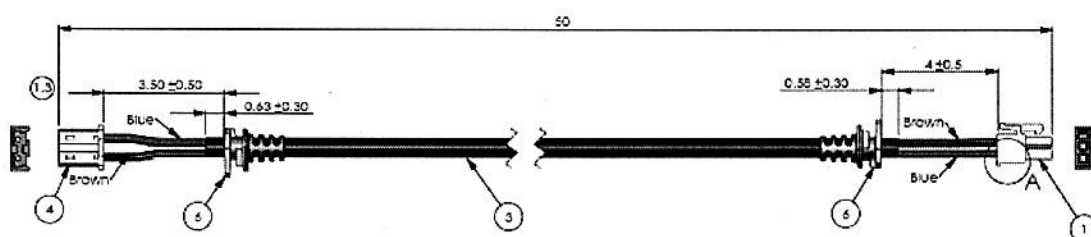
13.2. If it were agreed that communications hubs would always be 'stand alone', only the power connector plug would need to be standardised, using 230v AC as a universal power supply. The universal power supply can allow communications hubs to detect power outages, monitor voltage (if ESMS is not fitted) and support PLC for tall buildings.

13.3. The intimate interface is seen by some as being necessary to allow a quicker installation but in our view the time required to fit a stand-alone communications hub is likely to be virtually the same. The only additional effort is to fit a mounting screw and then to plug in the connector.

13.4. An intimate interface could stifle innovation by only allowing one type of physical connection and certain 'specified' connectors to be used, for the duration of the smart metering programme. We do not believe that SMETS 2 needs to include a specification

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for an intimate interface, as it does not support all solution types. The trend in technology is generally towards miniaturisation but we fear that this could be curtailed for smart metering by an over-specified design for an intimate interface.

Question 14. Do you agree with the Government's marginal preference for the CSP-led model for communications hub responsibilities, or do you prefer the supplier-led model? Please provide clear rationale for the advantages and risks associated with your preferred option.

14.1. British Gas has been in favour of the CSP ownership of the Communications hub for many years and we have not changed our position. In our response to the Consultation on Smart Metering for Electricity and Gas in August 2009 we said this:

> *It would seem sensible for the communication device to be provided by the Central Communications Provider, leaving the metering to be funded by commercial MAPs as currently. In the event of a failure of a component – meter, WAN communication device, or RTD – the fault can be traced to the relevant component and the repair or replacement managed without impact on the other elements of the metering system. This provides accountability, by physically separating the metering and communication functions, and an easier route to future technology change.*

14.2. CSPs are naturally the most suitable stakeholder group to be responsible for communications hubs and we understand the attraction of the proposal for installation and maintenance costs to 'fall where they lie'. A complex recharging regime serves no party well and we accept that it would be unnecessary for the first installation of the communications hub.

14.3. We are, however, cautious about the prospect of writing a blank cheque for maintenance and replacement of communications units into the future. As we noted three years ago, the rate of technology change in communications has been significantly higher than in metering and we must protect against, for example, the costs of a CSP decision to update all metering points to a new communications platform. We note, however, that ownership by the CSP mitigates this risk to a large extent, and would only support a change where the benefits case is strong and proven.

14.4.   We hope that there is no wide scale failure or requirement for a product recall of communications hubs but, if there were, it would be unreasonable to expect suppliers to absorb the non-capital costs of their replacement. Similarly, costs for attending to ad hoc warranty claims will also need to be covered. We do not accept, therefore, that any supplier costs related to CSP-provided communications hubs, other than the first installation, should be borne by suppliers.

Question 15. Do you agree with the proposal that a CHTS-compliant communications hub should not be mandated for opted out non-domestic sites and that suppliers should be free to use whatever type of communications equipment best supports their processes and WAN service?

15.1.   Yes, we think that the approach proposed is probably the best available if the use of the DCC remains optional for suppliers to non-domestic sites. It is important, however, that no other components of a smart metering system are also required to be changed, e.g. there must be no dependency from the meters on proprietary aspects of the alternative non-CHTS hub.

Question 16. Do you agree that the gaining supplier should bear the costs of installing an appropriate communications hub if they decide to switch between opted in and opted out?

16.1.   We have some concerns with this proposal. The choice that is available to non-domestic suppliers over whether to take DCC services is supported (though our expectation is that alternative providers (with much smaller scale) will struggle to match the costs and service levels available from the DCC). Having that choice inevitably complicates the Change of Supplier process if the two suppliers in question have made different decisions over whether to opt in or out of DCC services. There is some customer inconvenience in hub replacement and considerable supplier cost.

16.2.   This is acceptable once in our view, e.g. to install a CSP-supplied SMETS 2 hub, but we are concerned at the potential exchange of hubs in perpetuity, which could add to the acquisition costs for non-domestic suppliers. A supplier acquiring a site requiring a

communications hub replacement will not want to pick up the cost, so has three main options:

a. To pass the cost on to the customer (a difficult proposition),

b. To spread the cost across all customers

c. To avoid acquiring customers where a replacement communications hub is required.

None of these options is particularly welcome in a competitive market. To stay profitable it is likely to increase costs to customers in addition to the inconvenience and disruption associated with the replacement of one working device with another working device.

16.3. We look forward exploring with the DCC their capability and willingness to adopt non-SMETS metering equipment, including communications hubs.

Question 17. Do you agree that the design and implementation of outage reporting functionality should be assigned to CSPs, documented in the communications hub technical specification?

17.1. Yes, we agree this is sensible and reasonable.

Question 18. Do you agree that it would be inappropriate to require meters operated outside DCC to be required to implement outage reporting? Please provide rationale to support your views.

18.1. Yes, British Gas agrees that this would be inappropriate. We are not convinced that 100% coverage of outage reporting is necessary and if Networks disagree they should make the case.

Question 19. Do you agree that maximum demand registers should be included in SMETS? Please provide evidence to support your position and provide evidence on the cost implications of delivering this functionality via back office systems or via the meter.

19.1. We do not think it is unreasonable for maximum demand registers to be included in SMETS, though from the evidence set out in the consultation we can see some advantages to option 2, using back office systems:

    a. It provides greater flexibility over data analysis

    b. It could be applied to all meters including SMETS 1 of which there could be several million

    c. It places the costs of provision with the owner of the benefits

19.2. Our preferred solution is option 2, therefore, but we will rely on DECC to take a balanced view and to select the approach with the strongest business justification.

Question 20. Do you agree with the proposal not to include the capability to generate additional voltage alerts based on counter thresholds in SMETS 2? Do you have any evidence that could justify including this functionality in SMETS 2?

20.1. Yes we agree with this proposal and do not have any evidence to justify its inclusion. The required thresholds can be determined from the half-hourly data stored in the meter, but adding complexity where none is required is not advised, as analytics can be more effectively performed and modified by the DNOs.

Question 21. If DNOs were permitted to access remote disablement functions, should control logic be built into DCC systems or meters? If the logic should be built into meters, should the logic be specified in SMETS 2? Please provide rationale to support your position including estimates of the cost of delivering this functionality under the different options being considered and any evidence relating to safety issues associated with each option.

21.1. We do not agree that DNOs should have the ability to disable and enable smart electricity meters. This is not an acceptable customer experience and could easily be championed by the anti-smart lobby as another reason for consumers to refuse to accept smart metering. If the ability were institutionalised into the industry design it would be used. Without it, more effective demand side management will be required and will be developed.

21.2. There is no requirement to build this logic into the SMETS design. The case has not been made. If it is ever made in the future, the DCC solution means that it could be introduced without impacting on smart metering systems. We sincerely hope that it will not be introduced, however, as customers should be able to rely on their chosen supplier as the primary contact on all energy matters. The customer-supplier relationship is clear. Shared accountability and contact arrangements would compromise this and could undermine somewhat the anticipated gains from smart metering in efficiency, simplicity and customer service.

Question 22. Do you agree that variant smart electricity meters should be specified in SMETS 2 and that the cost uplift for variant smart meters is similar to that for variant traditional meters? Please provide evidence of costs to support your views on cost uplifts.

22.1. Yes, we are satisfied that the proposed variants are justified.

22.2. We are not qualified to comment on the likely cost differentials and will leave this to the manufacturers and their trade associations to answer.

Question 23. Do you agree that randomisation offset capability should be included for auxiliary load control switches and registers as described above? Do you have views on the proposed range of the randomisation offset (i.e. 0 – 1799 seconds)? Please provide evidence on the cost of introducing this functionality.

23.1.   Yes, we agree that this capability should be included. The proposed range looks rather wide. It could perhaps be confusing or frustrating for consumers (for example, waiting to recharge an electric vehicle) if they have so little certainty over timings.

23.2.   We cannot provide evidence on the cost of this functionality.

Question 24. Do you support Option 1 or Option 2 for 'pairing' a CAD to the HAN? Please present the rationale for your choice and your views on the implications that these options have for the technical design of the solution.

24.1.   Our preference is for Option 2, remote pairing. It is unclear what take-up there will be for CADs but the three principal sources will be energy suppliers, retailers and ESCOs. For the last, it does not seem appropriate that there should be any dependency on the energy supplier to enable a device that has been obtained from an ESCO with whom they may be competing.   That would be necessary under option 1 but since ESCOs must be SEC parties they could be responsible for the full service provision under option 2. We think this is the best approach for all parties and that it is in the commercial interests of ESCOs to provide a full service.

24.2.   Option 1 is weakened by the low probability of customers retaining the passkey for something which may not be needed for months/years/ever.

Question 25. If Option 2 were adopted, do you agree that obligations should be placed on energy suppliers to support this process by submitting 'pairing requests' to the DCC on request from their consumers?

25.1. Customers purchasing a CAD independently would still need supplier support and we see no difficulty with this.

25.2. A secure method of verifying the legitimacy of the request is required, to prevent fraudulent access by an unscrupulous ESCO within range of the HAN, for example. We are not convinced that this needs to be anything as elaborate as a customer identification number but a control of some kind will be required (e.g. who is energy supplier? What is current meter reading? etc.)

Question 26. Do you consider that other CAD installation options should be pursued? If yes, please explain the approach you favour and your reasons.

26.1. It is essential that the installation/commissioning process for Consumer Access Devices is straightforward so that the procedure can be undertaken by consumers themselves, without the need for a visit or technical assistance.

26.2. We are not attracted to any requirement for button presses on the communications hub as we can expect these to be items of hardware in which most customers have no interest, and possibly limited ability to identify. Our preference for the key to be held at the DCC rather than in the metering system and we think it should be possible to develop an automated process (e.g. though a website) to authorise connectivity.

Question 27. Do you agree with the proposal to include in SMETS 2 a specification for a PPMID, connected via the HAN, as described above?

27.1.   Yes, we agree that it is sensible to provide an option for pre-payment functions to be available on a device that is more easily positioned and therefore potentially more accessible than the meter(s).

Question 28. Would including the capability to enable gas and electricity supply through a PPMID connected via (a) a wireless HAN or (b) a wired HAN meet GB safety requirements? What impact would including this capability have on the cost of smart metering equipment? Please provide evidence to support your answers.

28.1.   British Gas has concerns over the principle of designing an architecture that allows a gas supply to be re-enabled through a radio signal. We are aware, of course, that there are potential advantages in the approach:

a.   Customer convenience is improved through accessibility,

b.   It could allow pre-payment to be offered to a range of customers for whom it might not otherwise be 'safe and reasonably practicable',

c.   Costs for suppliers could be reduced through there being fewer requirements for meter relocations.

28.2.   However, whilst we are sure that the initial installation would be configured to be safe and ensure that any instruction to open the valve came only from the authorised PPMID, we are not confident that this principle would hold as future technology develops. Devices and homes are becoming increasingly connected through communications networks. A metering system configured to accept commands from remote devices could have little capability to discern the location of the device from which the command has been sent. It could be a PPMID. It could be tablet or mobile phone with PPMID functions. Although not proposed today, such developments are small steps, not giant leaps, and we are extremely nervous about sanctioning a design that weakens the safety

procedures that are in place with traditional metering.

28.3. That said, the advantages are attractive: if manufacturers can prove that the safety case is made and our concerns unfounded then we will support the inclusion of this capability in the design. At present we are not persuaded and would oppose it for gas.

28.4. We are less concerned over electricity where we think the risks are lower and similar to supply restoration after a power cut. We think electricity supply restoration from a PPMID would be helpful to customers and should be included in the design requirements.

Question 29. Do you agree with the proposal that the communications hub should be specified such that it can support multiple smart electricity meters? How many smart electricity meters should be supported by each communications hub?

29.1. Yes, we agree that the hub should be capable of supporting multiple electricity meters.

29.2. We are aware of a (very low) number of properties with more than one gas meter, so the option to support multiple gas meters should also be considered.

29.3. We will need to conduct further analysis before answering the question on how many meters the hub should be capable of supporting.

Question 30. Do you agree that a specification for a HHT interface to the HAN should be defined? If yes, please identify the functions that this interface would need to support and the scenarios in which such functionality could be required.

30.1. Yes, we support the development of a specification for HHT interface to the HAN.

30.2. The only functionality that is required is to support meter installations. Once installed and connected to the WAN all further configuration should be executed without the use of the HHT. This is important to restrict the damage that could be done if a Hand Held Terminal were misappropriated. We have examples of today's HHTs for pre-payment

being used to apply credit fraudulently. By excluding that functionality, which is not required, that risk is reduced.

30.3. We suggest that the precise interface requirements for the HHT interface should be developed through a group such as SSWG.

Question 31. Do you agree with the proposed approach to the governance of security requirements? If you propose alternative arrangements please provide evidence to support your views.

31.1. We support the proposed approach as this allows the appropriate balance of technical expertise, stakeholders and SEC members to review risk and determine policy and action.

31.2. We agree that further consideration will be required of specific aspects such as change procedures, voting rights, confidentiality, approval processes and disputes, but that is true of any approach. The proposal of a technical sub-committee under the SEC would allow the relevant parties to participate in the management of security issues and developments pertinent to smart metering and should provide the confidence that expert opinion and industry parties can deliver the objectivity to progress security initiatives that are proportionate to any risks identified.

Question 32. Do you agree with the proposal to establish independent assurance procedures for DCC and DCC users? Please explain your views and provide evidence, including cost estimates where applicable, to support your position. Comments would also be welcome in relation to the impacts and benefits of the proposed approach with regard to small suppliers.

32.1. Yes, we think it is appropriate for independent assurance of security to be a requirement as all parties need to be confident in the security measures established by other participants. This is essential to eradicate any weak links or potential areas of vulnerability that could undermine trust and customer confidence in the Programme, energy suppliers and smart metering. We are cautious regarding the implication in the

consultation that procedures for smaller suppliers may be less comprehensive or rigorous than those for larger suppliers.

32.2.   We do not have reliable information on costs but we support the proposal that the assurance regime should be role-based and would expect this contract to be awarded through a competitive tendering process to an organisation that would implement the regime on behalf of all suppliers. For large suppliers we would expect the costs to be standard and fixed, but with variances based on a day rate that would be determined by factors such as the number of site visits, or time taken to gather required evidence.

Question 33. Do you agree with the proposal that re-testing should occur at least at set intervals and more frequently when significant changes to systems or security requirements are introduced? Please explain your views.

33.1.   We do not see any particular merit in retesting at set intervals but would not necessarily oppose this if a compelling rationale were presented. In our view any retesting should be driven from risk assessments and, as proposed, when significant changes to systems are made or new security requirements are introduced. It is important, as with the assurance procedures at market start up, that participants are confident that no other party has compromised the security of the smart metering infrastructure. To that end, an annual statement to confirm that no significant systems changes have been made or are imminent, and that a risk assessment has been conducted, may be an effective alternative to fixed cycle re-testing.

Question 34. Do you agree with the proposal to establish an independent security certification scheme for smart metering equipment? Do you have any views on the proposed approach to establishing a certification scheme or evidence of the costs or timelines for setting up such a scheme or submitting products for certification?

34.1.   British Gas agrees that an independent certification scheme for security of SMETS 2 equipment is appropriate.

34.2. In principle, it could also be applicable to SMETS 1 equipment for enrolment purposes but, in the absence of the detailed requirements, it is uncertain how likely it is that such equipment would comply with a retrospective addition to the specification. Our current expectation is that there should not be any difficulty, provided none of the requirements amend any hardware aspects of security. If this is not the case, then it is important, as with any future amendments to the SMETS, that compliance with a version of SMETS extant at the time of manufacture is not an obstacle to interoperability and, other than in exceptional circumstances, is not a trigger for premature replacement. This is an important principle without which the costs of deployment could escalate uncontrollably.

Question 35. Do you agree that sanctions for non-compliance with security requirements should be included in the SEC? Do you have views on the nature of the sanctions that might be imposed?

35.1. We do not agree that an incentive is required to comply with security obligations but accept that the consequences of failure could impact more widely than simply on the culprits. For that reason we agree that some sanctions should be considered and that they should be proportionate to the detriment caused.

35.2. A withdrawal of DCC services may be appropriate but that is unlikely to be true in all cases. That may impact on customers and may not be necessary if the failure has been addressed. Rapid remedial action should always be the priority and any sanctions should take account of many factors, including the speed of rectification and how the failure was identified. It is important that any sanctions regime does do not discourage parties from self-declaration of security shortcomings. We support the principle of sanctions for the reasons stated but look forward to further engagement on how best to ensure transparency, proportionality, redress and incentivisation.

Question 36. Do you agree with the proposal to, in effect, extend the arrangements already proposed for SMETS installations prior to DCC operation, to all installations being operated outside DCC? Please provide evidence of the costs that might be incurred and the impact of this approach on small suppliers.

36.1. British Gas was supportive of the approach proposed in the consultation relating to security risk assessments and therefore we are in full agreement that this should be perpetuated for any SMETS metering systems that are operated outside the DCC.

36.2. We are unable to comment on the impact of this for small suppliers.

Question 37. Do you agree that interoperability is central to the development of a successful smart metering solution and that activities related to the assurance of SMETS equipment should be governed by SEC? Please provide views on the governance arrangements that would be appropriate for assuring interoperability of smart metering equipment.

37.1. Undoubtedly, interoperability is a central tenet and the principal rationale of the proposed solution. If it were not for that fundamental requirement, there would be no justification for the DCC or for the SMETS.

37.2. In 2011 the Interoperability Testing Working Group proposed the establishment of a group under the SEC with responsibility for interoperability testing, executed through independent test houses. It was proposed that testing should adopt the principle of assessment against 'golden units' to overcome the almost limitless combinations of components that might constitute a smart metering system.

37.3. In practice, we are not convinced that this level of governance is required, though it would have the benefit of providing a natural home for any 'approved list' of smart metering equipment. We believe that the natural commercial incentives of MAPS and CSPs to secure metering equipment with assured longevity will ensure that a rigorous test programme is undertaken prior to investment. This is likely to engage independent test houses and golden units, as the Working Group envisaged, but without the overhead of

an additional layer of governance of this process.

Question 38. Do you agree with the creation of an 'approved products' list and the requirement on suppliers and CSPs to obtain, retain and provide evidence of appropriate certification should apply regardless of whether they intend to enrol the equipment in DCC?

38.1. We see some merit in instigating an 'approved list' of smart metering equipment but do not see this as a critical requirement. We can expect a large volume of products and versions to come to market over the next decade and the database of approved units could rapidly become enormous and difficult to maintain. It would need to include firmware information in addition to model details, versions and variants. It is also uncertain what 'approval' would signify. Whilst full interoperability is the aim, the full range of possible combinations of hardware, firmware and software cannot be anticipated and tested. It is conceivable that years from now it is discovered that an approved 2013 IHD from manufacturer 'A' produces error messages in certain scenarios when paired with an approved 2019 electricity meter from manufacturer 'Z'. Which device loses its approved status?

38.2. We believe that the arrangements set out in paragraph 196 are sufficient for smart metering and that the proposed additional certification for security compliance and the GB Companion specification are adequate. We see no difficulty in requiring suppliers and CSPs to procure only certified equipment though, in practice, we would expect evidence of certification to be held by equipment manufacturers.

38.3. There is a list of approved electricity meters for certification purposes that is maintained by the National Measurement Office[1]. That could be modified to encompass the proposed additional certification and avoid split ownership of approved lists for different purposes, that could easily go out of alignment. We are not wholly convinced that equivalent approval lists are essential for all smart metering equipment but we are aware that many stakeholders are strongly committed to the idea. We have no

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[1] The Meters (Approval of Pattern or Construction and Manner of Installation) Regulations 1998, SI 1565 and the Meters (Certification) Regulations 1998, SI 1566 (with In Service Testing introduced in lieu of certified life).

objections but, if it is determined that there is a requirement, we think it would be sensible for ownership to reside with one body (such as the NMO) or, if held under the SEC, for robust processes to be established to ensure no possibility of misalignment with approval lists held for different purposes.

Question 39. Do you agree that protocol certification (against a GB Companion Specification) should provide adequate assurance that a product will meet interoperability requirements? Please explain your views and identify any additional assurance testing that you consider to be necessary and the rationale for including such testing.

39.1.   British Gas agrees that protocol certification against a GB Companion Specification does provide full assurance that a product meets interoperability requirements. We see no requirement for additional assurance testing though, as part of their risk management, would not be surprised if MAPs undertook or specified additional testing to provide assurance over the longevity of their investments.

39.2.   No prescribed additional assurance testing is required in our view.

Question 40. Do you agree with the Government's proposals to require energy suppliers to operate specific aspects of smart metering equipment functionality for domestic consumers? Please provide rationale to support your position.

40.1.   We agree that most of the consumer benefits of smart metering are derived from the use of the additional data they provide. Without access to and use of that data by consumers and suppliers the programme will achieve little.

40.2.   We see no difficulty in the proposed obligations to ensure that the smart meter functionality is made available to consumers, including access to the data held in the metering systems.

40.3.   We note the intention that the obligations should apply also to SMETS 1 metering systems installed after the obligations come into effect. Whilst supporting that intent, we

believe further consideration of its practicality is needed since the HAN and the CAD are not specified under SMETS 1. We note that for micro-business customers it is not proposed to impose certain operational requirements as it would create additional costs to deploy technology that would not otherwise be required (e.g. a specific communications hub). We think that a similar approach should be taken with SMETS 1 installations for domestic customers.

40.4. We do not yet know the take-up of ESCO services or the extent of CAD usage by domestic customers so, if a CAD cannot be used without replacing part of the SMETS 1 equipment, that course should only taken at customer request. It could create avoidable costs and customer inconvenience if equipment is replaced simply to satisfy a Licence Condition that delivers an option in which some customers may have no interest.

Question 41. What are your views on the Government's proposals to require energy suppliers to operate specific aspects of smart meter equipment functionality for micro-business, but not other non-domestic, customers?

41.1. We support the proposals in this area which recognise that the needs of different customer segments are variable and should be delivered through a range of mechanisms.

Question 42. Do you agree that the licence conditions as drafted effectively underpin the Government's policy intentions for consumer operational requirements?

42.1. British Gas is satisfied that the Licence Conditions underpin the policy intentions.

42.2. We are concerned, however, at the broad scope of condition 3 which we feel could be undeliverable. We do not think it is reasonable to require a Communications Link to be established, without qualification, between the Smart Metering System, the IHD or 'any Consumer Device'. The term Consumer Device is defined but its location is not. Suppliers cannot be expected to establish communications for device that is outside the reach of the HAN.

42.3.   We agree with the scope of what is defined as 'Customer Information' in paragraph 9. Our assumption is that no historic information is required for 9 (c), relating to previous tariffs, where there has been a change.

Question 43.   What are your views on the Government's proposals for obligations to be included in the SEC for information to be made available to Network Operators and ESCOs via the DCC?

43.1.   We support the inclusion of the majority of the proposed obligations in the SEC, but again question whether they should be applicable to SMETS 1 metering systems. Some of the information in paragraph 227 is specified only for SMETS 2 meters and the benefits it provides would not justify the premature replacement of SMETS 1 equipment, if it proved to be unobtainable from these installations.

43.2.   The obligation to provide 'all tariff information used for billing purposes' is too all-encompassing in our view, since some of the information is held on billing systems, not in the meter (e.g. dual fuel discounts, loyalty payments, etc.)

Question 44.   Do you agree with the Government's proposals for the timing of the introduction of operational requirements? Please explain your reasoning.

44.1.   The start date for the operational requirements is not explicit in the Consultation but the principles set out appear to be reasonable in the main, i.e. they will apply for all smart metering systems installed from the effective date, or (for acquired smart meters) from the date of enrolment to the DCC, or (for smart meters acquired but not enrolled) by December 2019.

44.2.   Our only caveat to this is in relation to SMETS 1 meters, as described in paragraph 40.3 above. The implementation must take account of any relevant technical constraints or ambiguity (e.g. CAD connectivity) as the effect may otherwise be to suspend or slow SMETS1 installations.

Question 45. Do you agree with the proposed changes to the smart metering regulatory framework to reflect the CSP-led model for communications hub responsibilities? Are any other changes necessary?

45.1. Yes, we agree that the changes set out are sensible and that the Communications Hub Technical Specification should be referenced in the DCC Licence Conditions.

45.2. The changes to Supplier Licence conditions outlined in the consultation are appropriate in our view. We accept the obligations to install the Communications Hub but look forward to further discussion on the maintenance arrangements. Our uncertainty stems from what technical competence may be required beyond installation and replacement of the whole unit and the commercial terms that may apply in the event of a model failure/recall, requiring wholesale replacement.

Question 46. Do you agree that the equipment development and availability timelines are realistic? Please give evidence.

46.1. The timescales described seem like reasonable estimates provided no significant setbacks or unanticipated dependencies are encountered. They have been drawn up on the basis of expert opinion so we have no basis on which to challenge the dates outlined but none of them look likely to be delivered earlier. One the areas of most uncertainty is the time required to establish the certification regime for security as this establishes a dependency on a certifying entity that has not yet been identified.

46.2. We do not expect the ownership of the Communications Hub to impact on the time required for its delivery to the market. We agree that suppliers are incentivised and likely to begin installing, as early as possible, meters designed for compliance with SMETS 2.

Question 47. Do you agree that SMETS 2 should only be designated when the Government has confidence that equipment to satisfy the new requirements is available at scale? Should a further period of notice be applied to ensure suppliers can manage their transition from SMETS 1 to SMETS 2 meters?

47.1. We think it is sensible for designation to be triggered only when Government is confident that the supply chain is in place to handle the demand from suppliers. We do not see that this will in any way delay the transition to SMETS 2 meters or suppliers' commitment to deployment at scale. All are incentivised to make progress as soon as the capability is established and we expect none to wait until the obligation is triggered.

47.2. The consultation anticipates a potentially longer lead time for CSP-supplied communications hubs. In that event, it is unclear whether or how supplier-resourced hubs, installed with SMETS 2 meters prior to designation, would be adopted by or transferred to CSPs.

Question 48. What are your views on when responsibility for the SMETS modifications process should transfer from the Government to the SEC?

48.1. We support the intent set out in the consultation for governance of SMETS to transfer to sub-group under the SEC as soon as is practicable. We see no reason to delay this beyond the two criteria set out in paragraph 244, which we fully support as sensible and appropriate milestones.

Question 49. Which of the options (standing sub-committee or non-standing sub-committee) would you prefer in relation to modifications to the SMETS?

49.1. We do not hold a strong view on this but we think that a standing sub-committee would provide continuity and retained expertise that a non-standing committee may lack. We can envisage a substantial agenda for this group in the early stages of roll-out as new

equipment comes to the market and unanticipated issues emerge during certification and deployment.

Question 50.   Are there any particular areas of expertise that the sub-committee will need to fulfil its role, in terms of membership composition?

50.1.   The Programme has assembled a wide range of relevant expertise in developing the IDTS and the SMETS and it is reasonable to assume that a similar set of skills and knowledge will be required under enduring governance and change management.