Smart Metering Implementation Programme

Response to consultation on draft licence conditions and technical specifications for the roll-out of gas and electricity smart metering equipment (August 2011)

13 October 2011

The contents of this document are provided by BT for the sole purpose of responding to the DECC consultation "*Smart Metering implementation programme: consultation on draft licence conditions and technical specifications for the roll-out of gas and electricity smart metering equipment (August 2011)*".

#	Question/Response
1.	The Government is seeking new evidence and views on the impacts of specifying a completion date that is in the earlier part of 2019.
	A potential impact of specifying a completion date for the roll out is how the consequences of failure to meet the target laid down by Government will be appropriately managed. In particular, a penalty (10% of turnover) on Supply businesses for failure to roll out to 100% of their customers has been set for a specified date. It is however unclear how any impact or delays will be resolved between the DCC and Supplier during the roll out to ensure adherence to pre-agreed plans. Suppliers see the choice of communications technology and therefore the performance to be the responsibility of the DCC. There is a direct impact on installation success if there is no WAN communication available at point of installation. Lack of WAN communications results in an abortive installation, or a repeat visit, increasing the cost and timescales to the programme. How will accountability be apportioned with this split responsibility between the Supplier and DCC? Unless a 100% target is imposed on the communication provider how will the roll target on Suppliers be achieved or administered by Government?
2.	Do you think the licence conditions (AA1-2) as drafted effectively underpin the policy intention to complete roll-out of Smart Metering Equipment by a specified date? Are there any areas where you consider further clarification is necessary? Please explain your reasoning.
3.	Do you agree that the licence conditions as drafted effectively underpin the policy intention to deliver Smart Metering Equipment with the functionality and interoperability required to meet the business case? Please explain your reasoning.
4.	Do you agree that Smart Metering Equipment should be compliant with the SMETS extant at the time of installation and that it should continue to be compliant with that version of the SMETS through the operational life of the equipment? Please explain your reasoning.
	Agreed. It is unworkable to meet, maintain equipment or provide a service against an unknown specification if it is not in an existence at time of installation. Maintaining equipment to evolving specifications will result in a) higher additional manufacturing costs to compensate for unforeseeable options and b) the stranding or replacement of the equipment in order to meet new requirements included in the changing specification. Therefore any equipment should comply with the extant SMETS at time of installation.

5.	Do you agree that in some exceptional circumstances suppliers should be required to retrofit Smart Metering Equipment that has already been installed? Please explain your reasoning.
	Yes in some exceptional circumstances, e.g. security threat and potential consequential loss outweighs the cost for the retro-fit.
6.	Do you think that the licence conditions (AA3-6) as drafted effectively underpin the policy intention for the new and replacement installation of Smart Metering Equipment? Please explain your reasoning.
7.	What period of notice do you think would be appropriate before the new and replacement obligation comes into effect? Please explain your reasoning.
8.	What contribution do you think the interoperability licence condition as drafted could play in ensuring that suppliers work together to ensure Smart Metering Equipment is interoperable? Please explain your reasoning.
9.	Do you think the licence conditions as drafted effectively underpin the policy intention to ensure Smart Metering Equipment is interoperable? Please explain your reasoning?
10.	What role could a dispute resolution mechanism have a role in ensuring interoperability? What key features should such a mechanism have?
11.	For the smaller non-domestic sector do you agree that where there is a Current Transformer meter then suppliers should be required to install an advanced rather than Smart Metering Equipment? Please explain your reasoning.
12.	Do you think that the licence conditions as drafted effectively underpin the policy intention for Current Transformer meters? Please explain your reasoning.
13.	Do you think under the new and replacement obligation gas suppliers should be given the option to wait for the installation of electricity Smart Metering Equipment before installing the gas Smart Metering Equipment? Please explain your reasoning.
	Yes. If it was mandated that gas suppliers had to install gas Smart Metering Equipment, irrespective of whether the electricity Smart Metering Equipment is already installed, additional costs could be incurred at the initial installation due to the extra time required to install a stand alone Communications Hub. As a result the number of gas Smart Metering installations per day would be reduced. The stand alone Communications Hub would need to be connected to a suitable secure power supply and the gas meter installer would therefore also need to be suitably trained and qualified as an electrician. In addition if the power supply is made available from the DNO side of the existing dumb meter the gas meter

	installer will also need to be authorised to work on the DNO equipment by the relevant DNO. Both of these points could potentially mean that the gas Smart Metering Equipment installer would need to be paid at a higher rate than a gas meter installer without these additional capabilities. The estimated installation costs in the Impact Assessment do not include these additional costs. Therefore it is recommended that gas supplier should be given the option to wait for the installation of the electricity Smart Metering Equipment. It then becomes a commercial decision for the gas supplier to choose to incur the additional costs associated with installing in advance of the electricity Smart Metering Equipment.
14.	Do you think there are any other barriers to gas Smart Metering Equipment being installed before electricity Smart Metering Equipment? Please explain your reasoning.
	Yes. Although consumers do take advantage of dual fuel packages it can" t be assumed that these consumers will not opt to go dual supplier during the smart meter roll out programme. Therefore for the DNO to make a secure supply available on their side of the dumb meter is likely to require an additional project to roll out this across <u>all</u> dual fuel consumer sites not just those consumers currently taking their gas and electricity supply from different suppliers. The time required for this additional work to be completed is unknown. The costs of this additional work are not included in the estimated installation costs in the Impact Assessment. Therefore it is recommended that gas supplier should be given the option to wait for the installation of the electricity Smart Metering Equipment. Thus avoiding the need for the DNO to make available a secure power supply available on their side of the dumb meter.
15.	What do you think the implications would be of extending the new and replacement obligations to the licences of other relevant parties in relation to installing Smart Metering Equipment in new developments without the involvement of a supplier? Do you think mechanisms other than licence conditions should be considered to achieve the policy objective? Please explain your reasoning.
16.	Do you think the roll-out of Smart Metering Equipment has any specific implications for the provision of emergency metering services? Please explain your reasoning.
17.	What period of notice do you think would be appropriate before the obligation to provide an IHD comes into effect? Please explain your reasoning.
18.	Would the consumer changing their supplier raise any particular issues with regard to the approach set out for the provision of IHDs? Please explain your reasoning.
19.	Do you think the licence conditions as drafted effectively underpin the policy intentions set out for the provision of IHDs to domestic consumers? Please explain

	your reasoning.
20.	Do you agree that the Standard Licence Conditions identified above require consequential changes in light of the roll-out licence conditions? Do you agree with the Government" s proposed approach? Please explain your reasoning.
21.	Do you think there are any other consequential changes to existing licence conditions needed in order to make the proposed roll-out obligations work as intended? Please explain your reasoning.
22.	Do you think there are any consequential changes to existing legislation needed in order to make the proposed roll-out obligations work correctly? Please explain your reasoning.
23.	Do you think there are any consequential changes to existing codes needed in order to make the proposed roll-out obligations work correctly? Please explain your reasoning.
24.	Do you think that there are other requirements that the Government should adopt in the SMETS? Please explain your reasoning.
	The specification should include: 1. The requirements for the Communications Hub. These should be specifically identified within the SMETS. The requirements should include: Physical, mechanical, electrical and logical functions specifications; Physical characteristics (minimum envelope) should be identified so an assessment can be made of its suitability for installation; The mechanical requirements - separable WAN & HAN module should be identified; Electrical specifications- the smart electricity meter specifications calls for a number of electrical safety measures. Do these also apply to the Communications Hub? The Communications Hub is recommended as the preferred option for the enduring market and will therefore be a major component of the SMETS, yet presently does not have a dedicated section which explicitly identifies the functional requirements of this component within the technical specifications. These requirements will be required to manufacture a standardised Communications Hub to achieve interoperability. 2. The IDTS has prescribed several requirements for the HHT. This is a major component of the smart metering equipment technical specification and as such the HHT requires a separate section within the SMETS. In particular security and data protection functional requirements. These should be specifically identified within the SMETS under a separate section for the

	HHT. These requirements will be required to manufacture an HHT. The section should also outline who is responsible for interoperability of the HHT and how this should be implemented. 3. Accurate metrics on message sizes and frequency, and requirements for anticipated peak volume throughput across WAN and HAN as well as the service interface to DCC users should be included. This is a non-functional requirement that is needed to help scope component processing power, bandwidth and capacity design. 4. Whilst there are requirements specific to the Communications Hub, HHT and IHD these should be grouped under separate sections in the specification for each component. The section for Communications Hub should include (1) above and the section for the HHT should include (2) above. 5. The technical specification should explain how the smart metering system within the scope of the document fits into the overall end-to-end smart metering architecture. This should include a description of the system, security and service interfaces and outline the functional and non-functional requirements for such interfaces. For example this would include; a. How certificates are managed between smart metering system components and certificate authorities; b. Coordination of service activities between the SM-HAN maintainer and the DCC; c. Coordination of access control; d. Identification of which logical DCC systems interface with the smart metering system and how. 6. Clause 186 – If a generation meter is connecting to the SM-HAN then it should also conform to the same conditions for connectivity as any other SM-HAN connected device including conformance to application layer standards, i.e. DLMS/COSEM; 7. IM2 – Firmware upgrades should be applied incrementally and a maximum size for the upgrade should be specified. 8. We advise that the HAN transceiver (Interface) on the Communications Hub should be modular to enable it to be swapped out to allow it to be replaced without needing to replace the whole Communications Hub (e.g. if faulty).
25.	Do you agree that all the requirements recommended in the IDTS should be adopted by the Government in the SMETS? Please explain your reasoning.
SH (PB)	In general – yes. However, the following are examples of where requirements require further clarification and consideration to ensure they are feasible in practice, this work needing consideration before being included in the IDTS: IM3: 1. When a hub or module has been swapped a record of the new module type and its configuration will need to be recorded. Decommissioning and disposal records will need to be recorded for the replaced device. Who will be responsible for maintaining these records? 2. For backup/restore requirements – are there any likely security issues,

i.e. violation of security certificates? Also, backup and restore of queued messages and stored data will be required. If backup is done to the HHT device then there must be a policy/procedure to ensure meter readings are not retained on the HHT after the data is transferred to the newly installed Communications Hub and the installation completed.

IM11: The IDTS has prescribed several requirements for the HHT – As a major component of the smart metering equipment technical specification the HHT requires a separate section within the SMETS. If the HHT is to retain smart metering data for a period then this may be a security issue especially if this includes mirrored meter reading data. There must be requirements to ensure protection of data and to ensure processes and solutions to erase data when it is no longer needed to be kept on the HHT.

IN3: Where the requirement specifies that data should be made available to an external authorised party via the DCC, is the DCC service provider expected to provide this as a core service or is this a value added service driven by service requests? Such requests for files may put an additional load on the WAN, especially if a regularly scheduled update is created. Who pays for this traffic? The retailer? The third party? The consumer?

PC10: How will the UTRN be calculated and by whom?

ES 6: Should the word „ export" read „ import" ?

DI.1: The level of event logging may create significantly large log files. Clarity on what data must be transferred across the WAN (message size, volume, frequency) is required to size WAN and data services infrastructure and processing. There is a risk that too much event data will be generated requiring complex event processing and correlation tools to manage the data usable for operational staff.

HA.7 / HA.9: It is not clear how these different devices (load control, repeaters, boosters etc.) shall connect to the HAN and how the process shall be governed;

- How will they be connected?
- How are they authorised?
- Must they conform to SMHAN specifications?
- Who approves their connection and how is this maintained?
- How will the power source to these devices be guaranteed?
- Will there be a service level dependency?

HA.22: Non-interference with existing premises networks will be difficult to prove or guarantee. " Continues to work acceptably" is too subjective to be measurable
so how can it be determined who is responsible if a problem occurs across two different systems? This requirement should be further qualified. How can this be proven or measured. Suggest that in scenarios where the customer complains about interference then there is an obligation for the problem to be resolved by the SMHAN installer.

	WA.1: The interfaces to the WAN at the application data layer level must be standardised to ensure interoperability. The lower layers of the WAN interface must be able to exploit innovation, as per the M441 mandate. Standardisation at the lower layers is undesirable. The technical specification requirements definition should be replaced with the extended requirement definition as the focus is on the application layer and not the WAN lower layers. 1.66: Who will be responsible for supplying the Communications Hub and will this include the HAN communications integration? Is it intended that the WAN and HAN components will be separate modules within the Communications Hub? Will there be a standard interface between WAN and HAN modules? How will interoperability between WAN/HAN modules and meters / IHDs be tested? 1.32: States that the smart meter should have a product design life of 20+ years but should all other SMS components be 20 years? We recommend that the overall broad policies, functional and non functional requirements should be applied to the SMS as a whole and therefore should be addressed in a general statement in the Tech Spec. This not only refers to product lifetime but other aspects such as MTBF, availability, latency etc. 1.35: For Prepayment, BS EN 62055-31 only relates to Classes 1 & 2 – not to A, B or C and BSi need to amend this standard. What will the process be for ensuring BSi update the standard and what will the impact be in foundation for swapping between credit and prepayment? The specification needs to outline a strategy and process for this to be achieved. Should prepayment be allowed during foundation or even before the BSi specification is available? 1.66 – The statement needs clarification regarding the interdependency between the WAN interface/module and the Communications Hub in which it sits. Is the WAN interface modular and can it be replaced without the Communications Hub being replaced or if the WAN interface is to be upgraded then it is expected that the whole Communications Hub will be replaced? Swapping out Communications Hub may be for other reasons than the WAN – in such scenarios is it expected that the WAN interface will also need replacing? To support modularity, physical and electrical interfaces need to be defined in the Tech Spec for the WAN interface module in the Communications Hub. 1.66 - Responsibilities for supply, management and maintenance of the Communications Hub should be defined (in a separate section for the Communications Hub). Architecture section (figures 18 & 26) – Please can you clarify the padlock symbols on the diagrams. All devices with the exception of the HHT and the Gateway/Interface Bridge show a padlock symbol. What does this indicate and why don" t these devices include a padlock? 1.76 – There are no service levels specified for the IHD. For scenarios where the IHD is out of range due to communication issues this may cause support

	problems for prepayment updates via the IHD where the meter is also inaccessible (e.g. basement in block of flats). OP2.3 - The statement " The offset between UTC and local time shall be managed from the WAN" requires clarification. Does this mean the WAN provides UTC and is the WAN required to identify when BST changes? DS5 – Do tariffs change when BST changes? Which SMS component undertakes such tariff changes when local time changes? Who manages local time - Supplier, Data Provider or Communications Provider? IN3.2 – Which component of the SMS is required to store „ calorific value (CV) and PTZ conversion factor" and „ Current tariff identifier and tariff matrix" ? Is the Communications Hub gas mirror the location for these values? PC8.9 – PC8.14 (CPP) and PC8.17- PC8.20 (RTP) – Further clarification is required for CPP and RTP messages to be transmitted across the WAN as this may have a significant impact on network loading and bandwidth. GS4.4 – Further clarification is required if „ fast sampling" logs are to be transmitted across WAN to DCC. This may severely impact load traffic across WAN. It is important that messaging metrics and volumetric data is specified as a requirement on SMS and WAN components. HA2 – How will devices be approved? Who will govern approval and how will this process be implemented? HA19.4 – Who will manage all the device classes and approvals? DCC data provider, communications provider, or Supplier. HA11- Please can further clarification be provided – What is the objective of the requirement and in what scenario is this needed? Appendix A (Glossary) – The WAN definition states that the WAN is " used for two-way communication between Smart Meters and DCC" . This statement implies that the scope of the WAN also includes SM HAN connectivity between the Communications Hub HAN transceiver and smart meters (but not the HAN connectivity between HAN transceiver and the IHD or other devices connected to the HAN). Please provide further clarification if this is the intention. SP38 and SP56 – The two requirements are contradictory. SP38 states that " Non-Core Devices (i.e. not part of the SM HAN) may attempt to connect to the Communications Hub" and access control should allow this, whereas SP56 states " Only Core Devices shall be authorised to connect to the SM HAN" .

Clarification of what is a non core device and the rules for access need to be clarified.

SP58 – Please can you provide further clarification of which security requirements this refers to, i.e. SP.1 to SP.66?

	SP59 – Please provide further clarification on this requirement definition. What is meant by " or must implement the Communications Hub requirements" – does this mean the device must be the actual Communications Hub Communications Hub?The security requirements refer to the Hand Held Terminal (HHT) as the Hand Held Device (HHD) – are these two the same device?
26.	Do you agree that the security requirements recommended in the IDTS are proportionate to the level of risk that the End-to-end Smart Metering System faces? Please explain your reasoning.
	The Security Technical Expert Group (STEG) risk assessment and associated security requirements have been based on the Microsoft STRIDE (Spoofing, Tampering, Repudiation, Information disclosure, Denial of service and Elevation of privilege) approach that is not as holistic as other threat model approaches and methodologies. The STRIDE methodology does not cover full organisational, process and people security risks as well as security assurance / accreditation requirements for products. It will therefore not adequately manage security requirements related to any risks that have not been considered by the STRIDE methodology. We strongly believe that the end-to-end security has not yet been adequately provisioned. This may be due to the fact that non-SMDG areas of the programme have not been fully addressed or consulted. The Privacy Impact Assessment (PIA) has yet to be completed as well as communicating to industry who is accountable and who is responsible for the end-to-end security for the Smart Metering Programme and resulting service.
27.	Do you agree that the process outlined above is a suitable way forward to develop the SMETS? Please explain your reasoning.
	In terms of delivering an unambiguous response to a set of requirements, the greater the granularity of each specific requirement, the less ambiguous the response. The ideal requirement statement should contain just one requirement. The elaboration of such singular requirements is generally accepted as best practice by industry. Whilst this may not look "good English", it is considered to be "good engineering". The exhibited proposal showing the output post Government legal and regulatory review would appear to be taking the "well written" relatively unambiguous requirements from the IDTS and aggregating them to provide a consolidated but potentially more ambiguous requirement. We suggest that serious consideration be given to further elaborating the requirements to provide definitive and discrete statements. If this approach is not taken, Bidders would need to break such aggregated requirements down again as part of their response process - and there may be inconsistencies in the way this occurs - which is where ambiguity can creep back in, potentially leading to incompatibility problems.
28.	Do you think that the SMETS should ultimately be governed as part of the Smart Energy Code? What alternative arrangements could be adopted for the ongoing governance of the SMETS? Please explain your reasoning.

29.	What unit manufacturing cost reduction do you think can be achieved for Smart Metering Equipment over the next 20 years? Please explain your reasoning. Please also provide any other comments (accompanied by evidence) on the estimated costs of the Smart Metering Equipment as set out in the Impact Assessment.
30.	Do you agree that the Government should include a requirement for a Communications Hub in the SMETS? Please explain your reasoning.
	Yes. Inclusion of a Communications Hub will provide better options for dealing with deployments in different property types and will enable improved support for adoption of potential smart grid requirements through supporting connectivity of other devices to the smart energy HAN. However we advise that where gas is to be installed first there would be benefit in considering other viable options such as WAN communications direct to the gas meter. This will enable an easier installation for the CORGI installer, thereby removing the complexity and cost for an electrician. Such an option should not be excluded and should be made available as a fall-back solution.
31.	Do you agree with the estimated costs and benefits for outage detection and the Government proposal to require the Communications Hub to include the equipment necessary to provide electricity outage detection? Please explain your reasoning.
	We agree the cost estimate is broadly in line with the cost of deployment of outage detection within a Sensus Flexnet enabled radio/communications/WAN module. E.g. £1 per unit per year. The communications Hub or communications module or WAN Module is best positioned to detect an outage and send a notification. However the electricity meter is best positioned to detect the loss of power being the measuring device. The loss of power indication from the electricity meter will start the process of detection of a power outage within the Communications Hub, communications module or WAN module.
32.	Do you agree that the DCC Communication Service Providers should specify the requirements for outage detection as part of their general role in specifying the WAN technology? Please explain your reasoning
	We do not agree it is the communications service provider" s responsibility to define the requirements for outage detection, as these requirements will need to be defined by the industry in terms of " what characterises an outage" e.g. difference between momentary interruption and outage. It is the responsibility of the communications provider to send the outage notification. The Communications Hub or Communications Module or WAN Module is best positioned to detect an outage and send a notification. However the electricity meter is best positioned to detect the loss of power being the measuring device. The loss of power indication from the electricity meter will start the process of detection of a power outage within the Communications Hub, communications module or WAN module.
33.	Do you think that the Communications Hub should also have the functionality to send a communication to the DCC when power is restored? Please explain your

	reasoning.
	Yes " First Breath" should be included in the requirements. This will allow correlation to happen between premises where power has been restored and those that have not responded, so remedial action can be taken to identify those premises which have been identified as still off power. This will reduce costs of cable or lines crews by identifying secondary faults. These scenarios are becoming more prevalent with global warming. The Communications Hub or Communications Module or WAN Module is best positioned to detect a restoration and send a notification. However the electricity meter (being the measuring device) is based positioned to detect the voltage within its defined limit. The power indication from the electricity meter will start the process of detection of a power restoration within the Communications Hub, Communications Module or WAN Module.
34.	Do you agree with the Government" s proposal that fully integrated electricity meters and Communications Hubs will not comply with the SMETS? Please explain your reasoning.
	The option for a fully integrated Communications Hub with non-interchangeable (fixed) WAN communications module would not comply with the SMETS. However a fully integrated communications hub with interchangeable WAN communications module within electricity meters should be available under the SMETS. As long as the communication module is interchangeable without interrupting the consumer supply, this option should be allowable under the SMETS. [NL – we use the term " closely integrated" rather than " fully integrated" . If we are agreeing that fully integrated, i.e. not interchangeable, is not sensible, we should say this. We just confuse the answer by using different terminology.] Electricity meters with modular interchangeable Communications Hubs are essential for a cost effective roll out. A closely integrated Communications Hub meter should be permissible due to the space restrictions of some existing meter point locations. Without this option the smart meter roll out will leverage additional costs and consumer disruption having to move meter points.
35.	Do you think the Smart Metering Implementation Programme objectives would be better met by: a. Using the SMETS to mandate a separate Communications Hub with a fixed WAN transceiver? Or b. Giving suppliers flexibility over options for configuration of the Communications Hub33? Please explain your reasoning.
	The Smart Metering Implementation Programme objectives will be better met by allowing Suppliers the flexibility over the configuration of the Communications Hub. N particular, the smart metering programme objectives would be better met by using a modular Communications Hub with interchangeable WAN and HAN interfaces. Option a) would not deliver the SMIP objectives; The separate Communications Hub with fixed WAN transceiver creates a lock in to

	a single technology medium and possibly a single operator if the technology is capable of being locked. The separate Communications Hub would need to be replaced in the event of a change of communications medium and this would interrupt/disrupt the consumers supply. The last gasp functionality would be far more expensive - as the Communications Hub would need to also house the sensing element of the metrology to reduce the cost of determining an outage notification (e.g. not a momentary interruption of supply, one with a duration of greater than 3mins) The separate Communications Hub will need to meet the same or similar electrical safety standards and also include a separate power supply module to power the HAN, WAN, GAS mirror and extended functionality. Option b) in our opinion should be restricted to a small set of configuration options. Our preference would be to offer a meter with replaceable WAN (either option 2 or 3b) with guaranteed enduring WAN capability equal to the meter's metrology lifetime. The analysis (Table 5) shows such solutions offer best value.
36.	Do you agree there should be no restrictions on the HAN standards adopted by suppliers, provided they are available as a European (CEN, CENELEC or ETSI) or International (IEC or ISO) standard? Please provide evidence to support your position.
	The HAN Standards should be confined to the smallest number possible, ideally one. Having multiple implementations of multiple standards will pose a major problem, and increase cost, from an interoperability perspective. Choosing one (or as few as possible) may limit the useable physical mediums, but will ensure easier interoperability. Having multiple standards may: Give rise to situation (multiple retailers on one premises) where meters cannot communicate with each other or the same HAN; Consumers are locked in to (or a subset of) energy retailers who support the existing HAN standard in the premises; Need for the replacement of Communications Hub or other SM equipment on change of supplier; Customers will not understand the differences between standards (and potentially technologies) and become disenfranchised with the programme as a result – the simpler for the consumer the better;

37.	The IDTS has recommended that all standards should be recognised or be in the process of being recognised by 31 December 2014; do you agree with this recommendation? Please explain your reasoning.
	Yes. However, there should also be a process to continually review and evaluate the adoption of updated or newer standards beyond December 2014. As ongoing GB smart metering and smart grid requirements develop and become applicable or as new technologies come into existence there will be a potential need to adopt such standards to deliver new capabilities and services.
38.	Do you think that regulatory obligations are needed to underpin a systematic approach to testing of HAN standards during the Foundation phase? Please explain your reasoning.
	Yes, it is apparent that there is no single HAN technology which will cover 100% of homes in the UK. With multiple technologies, the possibility of multiple standards running on those technologies (see Q36) and multiple vendor implementations of those standards / technology combinations potentially leads to an interoperability catastrophe. In the interest of cost, the environment and common sense, those technologies used in the foundation phase should, wherever possible, be continued into the foundation phase. By not regulating at this stage DECC risk losing any reasonable control of the HAN environment.
39.	Do you agree with industry" s recommendation that DLMS should be adopted as the application layer for communications with the DCC? Do you believe there are any consumer, economic or technical issues with this solution which could be circumvented by an alternative approach? Do you have any economic, technical or consumer evidence to assist Government in evaluating industry" s proposal?
	Yes - the recommendation should specifically state that DLMS/COSEM should be adopted. DLMS alone does not define a specific smart metering standard – the specification relevant for smart metering is termed DLMS/COSEM comprising both the COSEM specification and an evolution of DLMS. It is DLMS/COSEM combined that provides a more metering specific view of the meter through the COSEM interface objects whereas DLMS alone was specifically designed to support messaging to and from energy distribution devices in a computer-integrated environment (e.g. monitoring devices on a power distribution network). We recommend only one WAN application layer should be active on any Communications Hub. Having more than one application layer could cause conflict with accessing the same hardware within the hub or smart metering system. The inclusion of multiple applications layers adds to the cost and complexity of the Communications Hub with added routing capability. This does not rule out the support for multiple applications layers, to allow for the evolution of technology within the smart metering system. The application layer could be different across different Communications Hubs, allowing newer versions of Communications Hubs to be supported and installed if newer protocols are developed and considered for adoption.

40.	Do you agree with industry" s recommendation that DLMS and Zigbee SEP 1.x should be adopted as the application layer for communications within the consumer premises, provided they install the necessary translation equipment? Do you believe there are any consumer, economic or technical issues with this solution which could be resolved by an alternative approach? Do you have any economic, technical or
	We agree with the recommendation of utilising DLMS/COSEM as the WAN application layer and SEP1.x as the HAN application layer. We support DLMS/COSEM tunnelling over SEP1.x to the electricity meter. We support the SSWG recommendation of translation of DLMS/COSEM objects to SEP1.x for the GAS mirror within the Communications Hub. This should not preclude the inclusion of future developments for alternative WAN and HAN applications layers. However we recommend a single application layer on the WAN and a single application layer on the HAN. This reduces complexity and associated cost of routing within the Communications Hub. Whilst the aspiration for one single application layer standard is in our view the correct way to proceed, it should be noted that the stated goal of 100% coverage throughout GB may not be possible for a single technology. This is because either the primary protocol is unsuitable for use over a particular physical medium which may be necessitated to enable communication with certain difficult meter positions, or the protocols will naturally evolve over the lifetime of the smart metering systems deployment thereby necessitating the adoption of newer versions.
41.	Do you think the Smart Metering Implementation Programme objectives would be best met by the proposed approach above? Or should a single, network-layer technology standard such as IPv6 be mandated? Please explain your reasoning.
	Yes - the focus should be on ensuring the communication services support and enable delivery of the industry (business level) functional and non-functional requirements (including security) and not be prescriptive about lower level network layer protocols. The lower layers of the communications solution should be left to the communications provider to allow innovation as per M441.
42.	Is the provision of a single network-layer address for each Communications Hub a reasonable and sufficient functional requirement for the Smart Meter WAN? Will this requirement limit potential future capability or present challenges, for example, in multi-occupancy buildings?
	Yes - the provision of a single static fixed network layer address for every communication hub is necessary to deliver the functional requirements for smart metering. This assumes a single communication hub per consumer" s premises, as multiple consumers" meters per Communications Hub may result in data privacy challenges. Each Communications Hub could hold the equivalent of network address translation to address individual devices within the HAN.

	Directly addressing each device would be problematic and may be restricted to a limited utility HAN device.
43.	Do you think that maximum and minimum demand functionality should be included in the SMETS? Please provide supporting evidence for your response
44.	Do you think that network registers should be included in the SMETS? Please provide supporting evidence for your response (including the cost implications for Smart Metering Equipment, and any alternative approaches that would provide this functionality).
45.	Do you think that the prepayment meter contactor switch should be utilised to protect consumer premises from " floating neutral" network faults? Please provide evidence on the costs and benefits to support your reasoning.
	Floating earth problems could be identified through a single detector at each substation or transformer as an alternative to placing a detector built into each meter.
46.	Do you agree with the proposed approach for consumers to access data and transfer it from the HAN via a separate " bridging" device? Please explain your reasoning.
	In the main part yes, the bridging technology should be standard across all devices so that the consumer can buy one, and one only, type of device and be assured of its compatibility. Ideally the bridge should be standard Wi-Fi 802.11n as is prevalent across all broadband routers and therefore ensures compatibility or some other radio standard such as ZigBee.
47.	Do you have any views on the options presented to ensure that electrical contractors can work safely and efficiently between the electricity meter and the consumer unit/fuse box? Please provide evidence to support your reasoning.
	In the event this functionality is to be provided a local mechanical switch is necessary offer adequate safety protection.
48.	Do you agree with industry" s proposals for an overall architecture of an application layer standard with translation through a Communications Hub to a HAN? Do you believe there are any consumer, economic or technical issues

	Yes. We recommend only one WAN application layer should be active on any Communications Hub. Having more than one application layer could cause conflict with accessing the same hardware within the hub or smart metering system. The inclusion of multiple applications layers adds to the cost and complexity of the Communications Hub with added routing capability. Likewise we recommend use of a single standard application layer across the HAN resulting in only a single level of translation on the Communications Hub.
49.	Where do you believe that translation is best managed: a) At the Communications Hub; Or b) At the DCC? Do you have any economic, technical or consumer evidence to assist Government in evaluating the options?
	If translation in this context refers to translation of a WAN application layer standard to a HAN application standard then we recommend this is best done on the Communications Hub. Given that DLMS/COSEM is to be adopted as the application across the WAN and SEP1.x for application interfaces on the HAN then translation could only feasibly be undertaken at the Communications Hub.
50.	Do you agree that the IHD should only be required to display ambient feedback based on energy usage? Please explain your answer.
51.	Do you agree that Smart Metering Equipment should be designed to support the calculation and/or display of account balances as described above, even though suppliers may not initially be mandated to invoke such functionality for credit customers?
52.	What do you think the costs and benefits are of mandating suppliers to display an account balance (over-and-above those arising from display of information on cumulative cost of consumption) for credit customers on their IHD?
53.	Do you agree with or have any comments on the Government" s proposals for the outstanding issues from the Response? Please explain your reasoning.
	We recognise that the outstanding issues are being addressed as summarised in Table 6 of the document. A number of these issues still require considerable work before their requirements are finalised, particularly where specifications need then to be derived to enable design and manufacture of smart metering components required for Foundation installation and interoperability proving (in particular we believe this applies to the Communications Hub). Additionally we wish to point out the importance of the Smart Metering Equipment Data Items specification. This Data Model is needed in both logical (i.e. definition of

	the data items and their relationships) and physical (i.e. specification of the data structures in whatever application layer standards are selected) in order for system sizing and designs to be undertaken. As such, the Data Model needs to be part of the SMETS and issued to bidders for both Data and Communications services to enable appropriate solutions to be derived and costs generated. This therefore needs to be available before the commencement of dialogue concerning either outline or detailed solutions. We note that section 3.2d (paragraph 105) says only that it will be issued with the final licence modifications.
54.	Do you think that an assurance framework, underpinned by regulatory obligations, is needed to support the delivery of the required functionality, interconnectivity, interoperability, and security of Smart Metering Equipment? Please explain your reasoning.
	An assurance framework, underpinned by regulatory obligations, is required to support the delivery of the required functionality, interconnectivity, interoperability and security of Smart Metering equipment. It is important for the SMIP to gain a satisfactory level of assurance for end-to-end security and to mitigate any interoperability and integration issues that will occur in a multi-supplier environment. This can be achieved through standardising codes of practice to ensure compliance with functionality and codes of connection (CoCo) outlining a mandatory set of requirements that must be suitably demonstrated before any interconnectivity or interoperability is authorised between parties operating in the smart metering system. These measures must work alongside and not instead of any legislation, licence or contracts. When the end-to-end smart metering system is operational then full monitoring, response, standardised change management processes and enforcement during the life of the service are required to ensure all processes and procedures are followed and do not introduce un-managed risk that could compromise the end-to-end security. It is important to ensure that any assurance framework that is adopted in Great Britain is aligned to planned or existing frameworks by EU member states to prevent misalignment of security requirements.
55.	Do you agree that as part of any assurance framework adopted, there should be a testing regime in place to support the delivery of the required functionality, interoperability and security? Please explain your reasoning
	A standardised testing regime needs to be in place to achieve any satisfactory assurance of an end-to-end secure solution and service as well as to mitigate any interoperability and integration issues. External testing and certification of products are required to ensure they were developed securely and do not introduce unmanaged risk into the smart metering system. Likewise end-to-end system testing is important to ensure any implementation, interconnections and interoperability functions do not add unmanaged risk to the system. To achieve the required secure interconnection, interoperability and coexistence with other elements it is essential that correct implementation of the standards is verified by conformance testing and interoperability testing, for example see Centre for Testing and Interoperability (CTI) http://www.etsi.org/WebSite/AboutETSI/HowWeWork/Testingandinteroperability.aspx. The testing regime will need to provide the necessary trust in products and solutions and ensure that unidentified risk is not introduced through implementation or

	operational error. It must also consider the long life and unattended operation of smart metering equipment. Any additional risk that is identified through this testing must be managed appropriately by a fully integrated Information Security Management System (e.g. ISO27001) that acts on findings appropriately. Failure to implement a robust testing regime may again introduce unmanaged risks through insecure implementation or operations.
56.	What are your views on the options outlined for a testing regime? Are there other options that should be considered?
	In the initial stages (i.e. not mature infrastructure) of a very complex IT deployment, like the smart metering implementation, we recommend that an organisation is formed to ensure that appropriate, standardised integration and end-to-end testing is managed. We believe that the options for a testing regime should be treated as independent components as they focus on different aspects, but they are all required and should complement each other to achieve end-to-end test coverage and thereby a secure end-to-end solution and service. Each of the DCC service providers should gain assurance through a market-led approach supported by external assurance through an approval, accreditation or certification scheme as evidence to support the quality and implementation of their products or system. Full mature testing regimes needs to be implemented early enough in this national programme to ensure that integration issues that arise are resolved fully and in a robust manner. These testing activities should be implemented and operated by a mandatory industry code or body to oversee and ensure quality and fairness across all testing providers and that this "body" gives approval so that everything does interoperate as intended.
57.	Do you think that a different approach to assurance is necessary for the Foundation and enduring phases? Please explain your answer.
	We believe that the assurance of the Foundation Stage cannot be as rigorous. We further believe it would be infeasible to require the same hybrid testing approach as outlined in question 56 as a mandatory industry code or body may slow down speed to market in the Foundation Stage. Contributing to this view is that full specifications for all components of the end-to-end smart metering system do not yet exist and may not even be on many manufacturers" road maps, coupled with that governance or testing capabilities are not yet in place. Therefore assurance activities in the Foundation Stage will possibly be managed by energy service companies themselves, but we recommend oversight and direction from the SMIP, supported by current certification or accreditation schemes such as e.g. FIPS, ISO, Common Criteria, BS, etc. which would provide mature levels of assurance for the Foundation Stage. This approach would also allow for Foundation Stage assurance activities to be evolved or matured into Enduring Stage operations where relevant.

58.	Do you think that the activities outlined above are a suitable way for achieving interoperability across Smart Metering Equipment cryptographic functionality? How else could this be achieved?
	We believe the activities outlined are suitable for implementation into the smart metering system, however to achieve true cryptographic interoperability it is important that common certificate policies, cross-certification and PKI standards are agreed and adhered to. All Public Key Infrastructures (PKIs) within the end-to-end smart metering system should obtain accreditation or certification, e.g. via tScheme (www.tscheme.org) to enable assurance of the PKI implementations and enable robust interoperability between parties. It is important for the SMIP to consider how the encrypted payloads can be checked or filtered for unauthorised critical commands, viruses, or malicious activities that will be required to meet other security requirements on data as it crosses security boundaries.
59.	Do you agree that cryptographic/ key management is necessary to secure the End-to-end Smart Metering System? Please explain your reasoning
	We believe, cryptographic / key management is critical in a national solution with multiple parties interacting to ensure the confidentially and integrity of smart metering data. Any cryptographic implementation is only as secure as its key and as such key management is critical to allow appropriate authentication, authorisation, confidentiality and trust across multiple platforms. Without robust key management " out of band" (i.e. a different communications method to deliver the keys, e.g. delivered face-to-face, over the phone, etc.) key exchange would be the only secure mechanism to allow for sharing cryptographic keys and this has proven to be problematic and expensive in other large Government programmes which is exacerbated by increased interoperability requirements as well as unpractical for a national rollout of millions of devices into people's homes.
60.	Do you agree with the Government" s assessment of the advantages and disadvantages of the cryptographic solutions identified above? What other options should the Government consider? Please explain your reasoning
	We agree with the Government" s assessment of advantages and disadvantages of the cryptographic solutions identified. We recommend that a hybrid approach is used to leverage the best capability of both types of cryptographic implementations as security of a symmetric key is better than the security of an asymmetric key. In addition, symmetric encryption is significantly faster than asymmetric for exchanging large a mounts of data, but asymmetric keys allow for better authentication and integrity checking through digital signatures for secure communication between parties.
61.	Do you think that it would be appropriate for the DCC to be responsible for cryptographic key management for the End-to-end Smart Metering System? What other options should the Government consider? Please explain your reasoning.

	The DCC is well placed to provide a smart metering bridge to allow for cross-certification of trust across smart metering parties. We therefore recommend that each party still maintain responsibility for their own key management backed off by a key Escrow-type service, but each party use the services provided by the DCC for secure interoperability. However, for this to work in an optimal and secure way all key management solutions should comply against specification and gain approval. This could be done using e.g. tScheme's "Specification of service subject to Assessment" (S3A) to achieve tScheme Approved Service as an example of an approach or a similar service offered by the Assurance Services within the SMIP.
62.	How do you believe the security approach should be applied to opted out non-domestic consumers? Do you see any issues with the approach? Please explain your reasoning.
	For clarity, we interpret opted out non-domestic customers to mean non-domestic customers that have energy management capabilities in place and therefore will not be interfacing with devices or processes as part of the end-to-end smart metering system. We would always recommend that any service or process is as a minimum compliant to security best practice such as ISO27001. It is also important to ensure that energy suppliers carry out risk assessments internally and that any threats to the end-to-end smart metering system from opted out non-domestic customers are managed appropriately. These risk assessments should be carried out both on a periodic basis as well as when changes occur. Should these opted out non-domestic customers in the future require to use the services or processes of the end-to-end smart metering system then they need to comply with the full security requirements, policies, standards, certification, assurance, etc. as required by the SMIP.