

Consultation On Draft Licence Conditions And Technical Specifications For The Roll-Out Of Gas And Electricity Smart Metering Equipment (August 2011)



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1 Overview

This document provides **Landis+Gyr's response to DECC's consultation on Draft Licence Conditions** and Technical Specifications for Gas and Electricity smart metering equipment. In developing its response, Landis+Gyr has worked to be as open and transparent as possible with its views to provide DECC with a clear view of its perspective on the market.

Landis+Gyr's general perspective on the Consultation is that the document and its outlook are very positive. We strongly support the architectural direction being taken by DECC to the shape of the UK market and the role of the various participants in defining the various elements of the smart metering system that will be required for overall success.

However, as in previous responses, Landis+Gyr remains cautious with regard to planning for an effective Foundation deployment. We have provided appropriate responses to support the development of industry confidence around Foundation and hope that these inputs will be helpful to DECC in planning the next steps in the programme.

We trust that the information contained in this document is useful and are committed to working with the DECC team to progress this critical UK infrastructure programme over the coming months and years.

2 Landis+Gyr Response Table

No.	Question	Landis+Gyr 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.	<p>Whilst primary responsibility and ownership for this area sits with the Energy Suppliers and their metering operations partners, Landis+Gyr believes that such a target is achievable. However, given that the UK has not undertaken the sort of centrally-coordinated pilots that have been undertaken in other European countries, our conviction is that such an acceleration will only be achieved if DECC provides appropriate clarity to support and aggressive and effective Foundation period deployment.</p> <p>If this approach is taken, we consider that the benefit gained by the UK in preparation for the Enduring phase of the programme will ensure the best possible chance of achieving the target completion date.</p>
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.	Primarily an Energy Supplier consideration.
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.	Primarily an Energy Supplier consideration.
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.	<p>Smart metering equipment should be compliant with the revision of SMETS that exists at the time of its certification. Note there will need to be a time window here to support the certification process, manufacturing build and logistics management of goods prior to installation. It would therefore be sensible for DECC to specify a minimum life for a given SMETS revision to allow such time-based planning to take place.</p> <p>Smart metering equipment manufactured to a given revision of SMETS may be firmware upgradeable for future changes in SMETS where this is needed to support the Energy Supplier or Network requirements. However, it will be important to differentiate between the ability to implement firmware upgrades and changes to a given revision of SMETS that require a hardware change. Where SMETS revisions require a hardware change, such a change should not apply to devices manufactured to previous SMETS revisions except in demonstrably exceptional circumstances.</p>
5.	Do you agree that in some exceptional	Landis+Gyr agrees with the potential for such an

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	<p>circumstances suppliers should be required to retrofit Smart Metering Equipment that has already been installed? Please explain your reasoning.</p>	<p>exceptional situation to arise but would emphasise the need for a detailed appraisal of any exceptional circumstances and the associated commercial impacts.</p> <p>For example, if the change is required to support the future delivery of Network benefits, who will pay for the upgrade exercise? Equally, if smart devices manufactured and deployed during Foundation have contributed extensively to the Enduring programme but are not compliant with the revision of SMETS defined for the start of the Enduring phase, how is the financial burden of any replacement weighed against the value contributed to the wider programme by those deployments?</p> <p>It is clear that there are 2 categories of device that might be impacted by this requirement – Foundation devices and Enduring devices. The parameters for retrofitting devices in each category are markedly different and DECC needs to provide a clear statement of requirements for each category of device to allow industry to be able to assess its potential commercial and operational exposure risk under the "new & replacement" obligation. Critically, it will be vital that DECC does not exacerbate market nervousness with regard to the potential for future retrofit by providing appropriate assurance for manufacturers, suppliers and funders that retrofit will be an exceptional requirement. Landis+Gyr believes that this assurance could best be given by defining the areas where a future non-compliance might give rise to a requirement to retrofit and describing the diligence process that would be undertaken prior to enforcing any demand for retrofit.</p> <p>Landis+Gyr believes that if DECC intends to place such a potential obligation on the market, it must also establish a system for controlling the specification such that the costs of a change that may require device replacement is fully considered as part of the change control process.</p>
6.	<p>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.</p>	<p>Primarily an Energy Supplier consideration.</p>
7.	<p>What period of notice do you think would be appropriate before the new and replacement obligation comes into effect? Please explain your reasoning.</p>	<p>As contributors to BEAMA's work, Landis+Gyr has previously provided manufacturing timeline guidance for DECC's consideration. Given that this timeline now falls outside of DECC's programme timescales, we believe that it is essential for DECC to work with industry to establish a minimum set of compliance elements that would allow design, manufacture and deployment planning to proceed for Foundation deployments.</p>

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		<p>If these minimum specifications were put in place prior to December 2011 then a New and Replacement obligation based on these minimum specifications could be targeted at decision-plus-9-months.</p>
8.	<p>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.</p>	<p>Landis+Gyr is conscious that a number of Industry participants have placed very high expectations on the degree of clarity and assurance necessary from DECC before they will commit to support the Foundation phase with realistic manufacturing, development and deployment commitments. We believe that this position is extreme and fails to recognise the very valuable information that the UK and the various participants concerned will gain from these early deployments.</p> <p>Landis+Gyr considers that the Interoperability Licence condition – if directed appropriately during Foundation – could be used to establish a clear basis against which DECC could ensure that Industry participants align in developing, selecting and deploying devices that adopt technology and specifications that are aligned with specifically defined elements of SMETS. In common with our response to (7), Landis+Gyr recommend that DECC work with industry to agree a minimum set of interoperability requirements (e.g. a defined 70 – 80% of the IDTS) and then require ongoing deployments to remain aligned with those requirements. The clear implication of failure to remain aligned would be exposure to a potential retrofit requirement.</p> <p>We Assume Application layer will be in scope for SMETS but working together with industry protocol groups to ensure the preferred application protocols are developed to meet the requirements in the SMETS (e.g. via SSWG).</p>
9.	<p>Do you think the licence conditions as drafted effectively underpin the policy intention to ensure Smart Metering Equipment is interoperable? Please explain your reasoning?</p>	<p>Whilst this is primarily an Energy Supplier consideration, as a member of SSWG, BEAMA and SBGI, Landis+Gyr is committed to supporting further work to assess how technical and commercial interoperability can be achieved for both foundation and DCC rollout phases.</p>
10.	<p>What role could a dispute resolution mechanism have a role in ensuring interoperability? What key features should such a mechanism have?</p>	<p>See responses to (7) and (8) above.</p> <p>Landis+Gyr believes that overall interoperability is likely to evolve during the Foundation phase as architectural interface specifications are agreed, implemented and deployed in real customer environments. As these real life lessons are learned, Industry will need to work to develop and embed new data objects into whichever languages emerge as the leading candidates for the Enduring phase. We anticipate that these additional data objects will initially be collated as GB companion specifications approved through the relevant standards</p>

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		<p>bodies.</p> <p>In parallel, the design of test specifications can be started to provide common reference points for manufactures and a full test assurance process can follow. The target should be to ensure this assurance process is in place for the Enduring phase.</p> <p>The governance around conformance to specifications is critical to this process. Ultimately we expect Energy Suppliers to procure devices and systems against SMETS plus their own additional specification preferences where such preferences exist and do not impact commercial or technical interoperability. As these real-life implementations progress, they will identify areas where even the best described interoperability requirements allow for differences in interpretation and implementation (ETSI standards for telecommunications, Bluetooth and USB have all shown this to be the case). Although industry can be expected to act in a reasonable fashion when such differences arise, a dispute resolution process would be extremely useful in helping to resolve intractable differences of view where the commercial implications of any resolution are significant to one or more participating parties. We would therefore support the establishment of an appropriate process to guide industry in such eventualities.</p> <p>In light of the above, Landis+Gyr believes that DECC's proposed separate hub architecture, along with the interface development work being pursued by the SSWG, offers the UK the best possible chance of establishing a truly interoperable, cost-optimised smart metering infrastructure. Without the separate hub architecture, we believe that the UK will simply be funding the non-specialist development of specialist communications equipment – a nugatory exercise given the time and commercial pressures on the UK smart programme.</p>
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.	Landis+Gyr would comment that whilst specifications and devices exist to support Advanced Meter installations, it would seem counter-intuitive to mandate the deployment of meters that have a different set of functional specifications to the wider domestic smart metering population. We would argue that the specification for such non-domestic meters should be aligned with the UK's smart metering specification set. The data collection, management and security requirements for these meters can then be aligned directly with the capabilities being implemented to support the much larger volume of domestic smart meters, ensuring the optimum value is derived from the DCC.
12.	Do you think that the licence conditions as	Primarily an Energy Supplier consideration.

No.	Question	Landis+Gyr Response
	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.	Primarily an Energy Supplier consideration.
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.	Whilst this issue is primarily an Energy Supplier consideration, Landis+Gyr does believe that industry and DECC need to agree interim means of standardising the installation process/procedure for standalone communications hubs for Gas first installations.
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.	Although this area is for the relevant licensed bodies to respond, Landis+Gyr would comment that provided such an extension of obligations is in line with responses to (7) and (8) above, it should be beneficial in achieving the objectives of the programme.
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.	Primarily an Energy Supplier consideration, although in common with the responses above, Landis+Gyr believes that a clear, achievable specification for interoperable Foundation period meters, utilising a universal, separate communications hub would allow emergency metering services to be deployed as smart solutions, deriving the maximum possible efficiency from the compulsory activities required during the period.
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.	We would recommend this requirement be aligned with (7) above. Landis+Gyr's response to (7) would apply here also.
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.	Primarily an Energy Supplier consideration.
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.	Primarily an Energy Supplier consideration.
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	Primarily an Energy Supplier consideration.

No.	Question	Landis+Gyr Response
	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.	Primarily an Energy Supplier consideration.
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.	Primarily an Energy Supplier consideration.
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.	Primarily an Energy Supplier consideration.
24.	Do you think that there are other requirements that the Government should adopt in the SMETS? Please explain your reasoning.	<p>We believe the core requirements from the IDTS and, where directly related, the Industry supporting documents should form the basis for the SMETS.</p> <p>Other key areas to be included in the SMETS would include:</p> <ul style="list-style-type: none"> • Clear guidelines on DECC's position with regard to device- and property-level interoperability and the anticipated testing and certification of that interoperability (as an example, this could be a reference to SSWG during the Foundation phase) • Confirmation of the required functionality and physical properties of the separate communications hub • Definition (or ideally deletion) of requirement for an Isolation switch • Definition of Outage Management requirements • Preferred approach for DCC to Communications Hub access (Push, Pull, Combination) • Updates to the security requirements • Further amplification with regard to the requirements for Hand Held terminals (HHTs) • Further inputs from industry to ensure the data modelling is more closely aligned with the preferred application protocols to avoid excessive rewriting of protocol standards to fit the GB model
25.	Do you agree that all the requirements recommended in the IDTS should be adopted by	The very wide range of inputs to the IDTS means that it represents a rich repository of industry expertise and

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	<p>the Government in the SMETS? Please explain your reasoning.</p>	<p>knowledge. However, it is still a raw document in a number of respects and the following should be addressed in generation of the SMETS:</p> <ul style="list-style-type: none"> • Confirmation that all of the items addressed in the IDTS are necessary in SMETS (rather than being required by the programme but external to SMETS) • Review of the extent of the IDTS specification vs. the minimum specification required reaching the IA requirements: has the IDTS become 'over specified'? • As described in the answer to (24), carry out an exercise to assess the data model with the preferred application protocols to avoid excessive rewriting of protocol standards to fit the GB model. This should include assessment by experts within SSWG which has already initiated this work for DLMS and SEP1.x. • Rationalise the location of the SMETS requirements (are requirements repeated in different areas? Which is the right 'home' for each requirement? Etc) • Provide clear identification of the degree by which the requirement affects each device in the SMS. The architecture supporting document holds a reference for this which now needs to be carried forward into the detailed ESoDR requirements in the IDTS. • Thorough review and alignment of detail with good Technical Authors.
26.	<p>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.</p>	<p>As members of the SSWG, Landis+Gyr believes that the security requirements in the main are appropriate to the level of risk. The Security white paper developed by the SSWG is broadly aligned with the output of the IDTS.</p> <p>We would recommend that DECC focus its immediate efforts on the core high level security requirements for SMETS to allow Foundation to proceed effectively. It is inevitable that Security will be an area that consistently evolves during both Foundation and Enduring phases of the UK's rollout; as such, understanding and agreeing the primary underlying characteristics of the SMETS security requirements will be absolutely key to ensuring a successful learning experience during Foundation in preparation for the Enduring phase.</p>

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27.	Do you agree that the process outlined above is a suitable way forward to develop the SMETS? Please explain your reasoning.	We support work along the lines of the example shown but would urge consideration of the answers to questions 7, 8, 24, 25, 26, 27 above.
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.	<p>Establishing effective on-going governance of the SMETS is not a trivial exercise.</p> <p>A requirement that Energy Suppliers use SMETS-compliant equipment can be achieved by Supplier Licence Condition. However, managing, maintaining, and providing guidance on the SMETS will require a technical panel with representation from across industry. A past example of this has been the relationship between MAMCoP and the standards organisations, IGEM, BSI, etc. It may be that a similar structure is best suited to managing the SMETS.</p>
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.	<p>Landis+Gyr believes that the 13% reduction assumption is unrealistic for the majority of elements in the UK's smart metering environment.</p> <p>It is realistic to expect this level of price reduction for high volume consumer electronics. As such, we would support DECC's proposal to separate the communications hub from the remainder of the smart metering set as it provides the only viable means of achieving price reduction levels anywhere close to the 13% level for any significant part of the proposed smart metering solution. Indeed, Landis+Gyr believes that separating the communications hub can have a profound effect on the cost and functionality of the UK's smart metering rollout, with even mid-Foundation hubs anticipated to be available at the Impact Assessment price level subject to the hub architecture being truly universal.</p> <p>However, the metering elements of the planned UK architecture do not align well with the consumer goods model. They contain significant proportions of electro-mechanical components that are raw-material intensive and are therefore more likely to increase in price rather than decrease. In addition, Smart Meters are designed and manufactured in (for consumer goods parallels) very small volumes – especially for BS markets – and are designed for significantly extended lifecycles when compared to consumer goods.</p> <p>A more appropriate index might be to look at the cost of the electronics components in industrial control systems, automotive engine control, or military applications, all of which use electronics designed to operate with high reliability over extended temperature ranges and time. There are a number of market forecast estimates for these sorts of equipment and we would recommend that DECC consider these indices as a means of establishing</p>

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		smart meter price reduction curves.
30.	Do you agree that the Government should include a requirement for a Communications Hub in the SMETS? Please explain your reasoning.	<p>Landis+Gyr believes that DECC is absolutely correct in including the requirement for a communications hub. We believe this step is a fundamental 'Day 1' requirement for the UK smart programme.</p> <p>As highlighted in (29) above, we believe that a universal communications hub is the only way to substantially and rapidly impact the cost and operational viability of the UK's smart metering deployment. Landis+Gyr is aware that a number of manufacturers believe that the communications hub concept will add to the initial cost of the UK's programme. We would counter this position by highlighting that our universal hub + electricity meter solution is already tangibly close to the IA price levels and is available today.</p> <p>Landis+Gyr believes that it is only with a common approach to hub designs that the industry will arrive at an operationally-manageable and cost optimised approach to :</p> <ul style="list-style-type: none"> • Enabling and supporting Gas First deployments, • Ensuring logical separation of access to gas and electricity data • Optimising the universal hub design to support alternative WAN solutions • Enabling HAN technology options for tall/difficult buildings, • Simplifying common architectural elements such as security, device mirroring, firmware image store and forward and the like
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.	<p>Landis+Gyr believes that the benefits case for outage detection is actually undervalued. Properly implemented outage detection should not only deal with the discontinuity itself but also the network events preceding that event. This level of management will be vital as we move closer to an environment with 20% renewable energy (where a residential outage may well also form a generation loss) and volume deployment of EV's as both loads and sources.</p> <p>However, whilst we believe the case for outage management may be understated, Landis+Gyr also believes that the cost delta provided to cover outage management is understated based on the design approach currently being taken by the various working groups and is more likely to be 1.5 – 3x the value provided. We have proposed an alternative approach to DECC that we believe will provide a far more effective</p>

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		outage management solution and a significantly enhanced degree of grid management information for less than half of the funding allowed in the IA. We would be happy to work with the DECC team to further define this option.
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	Landis+Gyr believes that the Outage Management 'use case' needs to be reviewed and further specified by the users of the service – Energy Suppliers, Network Operators and - importantly - Generators. Once it has been more clearly defined, industry needs to decide on an appropriate architectural approach. And once this approach has been defined then communications should be tasked with delivering the appropriate parts of the functionality within their WAN proposals.
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 – the ENA and others have frequently stated that a so-called 'Inage' message is a critical aspect of outage management and their requirement is understandable – it allows more accurate network and customer event management.
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.	As currently specified, yes, integrated meters would – and should - be incompatible with SMETS (IDTS). As a footnote, Landis+Gyr currently manufactures fully-integrated smart meters for the UK market (indeed, we have supplied almost all of the smart meters so far deployed in the UK) and, whilst it is tempting to argue for these devices to be made compliant, it is our judgement that integrated solutions lack the flexibility to support the rich scope of the UK's smart metering programme.
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 UK must be able to drive for key parts of the UK smart programme to be produced at volumes that reflect the overall programme volume if it is to achieve the aggressive cost points reflected in the IA. As highlighted in (30), Landis+Gyr believes that the communications hub is one such element that can and should be defined and hence produced in massive numbers and against a design that could readily be employed in other markets. Accordingly, we wholeheartedly support (35a): there should be no option for Energy Suppliers to make decisions on architecture that damage the UK's ability to optimise its deployment to no alternative benefit.
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.	To support technical and commercial interoperability without costly translation being applied to multiple meter pools, the smart metering HAN for Foundation and Enduring should be common across each deployment (although not necessarily common to both deployments – the HAN architecture might evolve between Foundation and Enduring). Landis+Gyr is therefore working to drive agreement between Energy Suppliers, Service Providers,

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		<p>Systems Integrators and Device Manufacturers to work together for common solutions for and hence experience base from Foundation. These results can then be used to viably inform the design criteria for the Enduring phase.</p> <p>Landis+Gyr believes that the ZigBee Alliance's SEP 1.x language could offer this common HAN functionality whilst allowing sufficient technical flexibility to allow the same language to be deployed over a number of different physical transport layers.</p> <p>Landis+Gyr recognise – as has DECC – that there is no currently-standardised HAN language that would meet all of the requirements for the UK market. However, we believe that the challenges of taking ZigBee SEP through standardisation are smaller than the challenges of taking an existing standards-based language and adapting it sufficiently to meet the needs of the UK market. We are therefore committed to supporting both DECC and the ZigBee Alliance in ensuring that SEP 1.x is formally identified as a work item by a European or International Standards Organisation.</p> <p>We agree with the HAN working group's proposal to use the European definition of openness in the shorter term:</p> <ul style="list-style-type: none"> • All stakeholders have the same possibility of contributing to the development of the specification, and public review is part of the decision-making process • The specification is available for everybody to study • Intellectual property rights related to the specification are licensed on Fair, Reasonable and Non-Discriminatory (FRAND) terms, or on a royalty-free basis in a way that allows implementation in both proprietary and open source software.
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.	Landis+Gyr supports this view. Smart Metering standardisation is rapidly advancing as is expected with the markets reacting to the US and EU regulatory initiatives. This is a suitable timeframe for assessing appropriate standards in HAN technologies. In the shorter term we agree with the proposals from the HAN working group to use the European definition of openness repeated above.
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.	Landis+Gyr believes that to support technical and commercial interoperability during the Foundation phase and to simplify that same interoperability in the Enduring phase, the main SM HAN needs to possess a common

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		<p>language structure across the UK smart metering deployment.</p> <p>Such a common language would allow disparate head end, data management and WAN communications solutions to connect to and operate a wide range of smart metering devices, regardless of the technical design of any individual device. It would also ensure that Foundation deployments provide a fertile development ground for the development and deployment of consumer-facing devices, all of which can align with the single, common HAN protocol avoiding repeated development of the same or similar solutions simply to cope with differing HAN environments and language structures.</p> <p>As previously communicated to DECC, our belief is that Industry can and will coalesce around such a standardisation to support the Foundation phase. With this support, Landis+Gyr does not foresee major problems arising prior to the Enduring phase. We believe industry is converging on a main SM HAN technology that will be suitable for a large majority of consumer properties. If the 'right' HAN protocol is selected, the existence of the protocol will also form the basis for device accreditation at a interoperability level, providing further reassurance for Energy Suppliers and Developers alike that their investments will have an effective market value.</p> <p>We support further work to build evidence on real-world HAN performance across different property types and in particular solutions of difficult property types. This could initially be by industry co-ordinating on radio module testing. However, it is critical that any such test approach is sensitive to the need to avoid delays to Foundation deployments that will provide much broader real field evidence as well as testing other parts of the end-to-end smart metering system and process that need to be robust for high volume deployments.</p>
39.	<p>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?</p>	<p>Landis+Gyr is not in favour of the adoption of a single WAN protocol at this early stage of the UK smart metering programme. Particularly, DLMS is ill-suited to this role as its use as a sole protocol would either necessitate:</p> <ul style="list-style-type: none"> • Conversion of other HAN protocols to DLMS at the hub; or • Design of non-mains powered devices to utilise DLMS to avoid translation <p>Converting or translating native HAN protocols simply to allow their carriage across the WAN on a single protocol</p>

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		<p>raises a number of issues and risks that have been faced and rejected by the wider IT industry, including:</p> <ul style="list-style-type: none"> • Potential security/authenticity risks through the unpackaging of certified data to allow its conversion • Ongoing integration challenges in repeatedly having to upgrade communications hubs when any element of the WAN or HAN protocol changes (to ensure translation continues effectively) <p>The only practical means of avoiding these issues is to tunnel protocols which not only adds complexity to the HAN and HES environments but also creates a significant WAN traffic overhead.</p> <p>Conversely, designing devices to use DLMS-only carries a set of design parameter implications that will drive cost and impact delivery timescales. These are not insurmountable problems – simply they are problems that are not surmountable within the timeframes necessary to allow wide market participation in Foundation.</p> <p>Landis+Gyr believe that DECC should support and direct the selection of HAN and WAN protocols that are truly adaptable enough to prevent conversion and translation between the HAN, WAN and HES and that are sufficiently well adopted in the market to allow Energy Suppliers a viable choice of devices for their Foundation phase deployments.</p> <p>We believe that industry should be allowed to utilise those protocols selected and approved as both HAN and WAN protocol options. This allows industry to innovate and drive simplicity for the HAN and the WAN where it can, but limits proliferation of WAN and HAN protocols by ensuring that Industry chooses protocols that are relevant to both environments.</p> <p>Through this approach (and as previously mentioned) it is likely that industry will coalesce around protocols that can genuinely be used as an end-to-end application layer, rather than simply forming a part of an end-to-end application layer that requires multiple translations between domains.</p> <p>Landis+Gyr is in favour of basing the WAN application layer on DLMS for the electricity meter and native ZigBee SEP 1.X for gas meter/gas mirror and communications hub.</p>

No.	Question	Landis+Gyr Response
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 consumer evidence to assist Government in evaluating industry's proposal?	<p>Landis+Gyr fully supports this assessment. As a Global manufacturer with deployments utilising every available HAN technology and without affiliation to any given HAN solution set, our evaluation of the UK smart metering demands very clearly predicated the use of ZigBee SEP 1.x for communications within the home to and from IHD, gas meter, and any consumer HAN bridging device.</p> <p>This common approach, in conjunction with a compatible bridge, provides ready support for forward compatibility, reduces the cost and operational impact of device firmware upgrades (only the device requiring the specific upgrade needs to be upgraded – other devices in the HAN will still interoperate with the upgraded device) and increases flexibility across the entire HAN (devices and systems can be developed to work with a common standard and not with particular device variants).</p> <p>It should be noted that, to support economies of scale in manufacturing, Landis+Gyr currently supports DLMS for data exchanges between the electricity meter and DCC (via the Comms Hub). A subset of the electricity meter data will also need to be supported in SEP1.x for communications with the IHD and consumer HAN bridging device.</p>
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.	IPv6 is an appropriate transport layer standard and should be an option but it should not be mandated. We agree with clause 154 – the transport layer should be left to the communications provider to allow innovation.
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?	Landis+Gyr believes that this issue should be debated with potential communications service providers. Depending on the architecture chosen, a single primary address per communications hub may well be sufficient for initial deployment, with sub-addressing being added as required/desired by the network management functions of the communications solution chosen. Equally, communications providers offering more IP-centric solutions may well opt to provide multiple device addresses. Single addressing should not be mandated until there is more certainty with regard to the nature of the DCC.
43.	Do you think that maximum and minimum demand functionality should be included in the SMETS? Please provide supporting evidence for your response	Landis+Gyr believes that the entirety of the supply parameter requirements included in IDTS should be reviewed with a view to rationalising the functionalities specified to obtain an optimum cost/benefit case. If maximum/minimum demand is seen as a commercially-justifiable requirement in light of that review then it should be included. We would strongly support deferring any decision to either include or remove supply quality measures until the outcome of the planned Foundation

No.	Question	Landis+Gyr Response
		phase deployments is known and real-world feedback can be amassed and reviewed to justify any business case assumptions.
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).	The reasoning for separate registers is unclear. If access to the registers is non real-time then the data is unlikely to provide the DNO's with any improved ability to manage renewable energy sources and the like over what the centralised data collated by the DCC would otherwise afford. If the registers are to be read/updated in real time then the assumptions on traffic etc in 158 – 162 are unrealistic and the cost implications for all aspects of the system are far more onerous.
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.	Landis+Gyr does not believe that this is a reasonable or commercially viable approach. We have already contributed to BEAMA's response in this area. We consider this to be a very significant change in the functional requirements for UK smart meters and one that would undoubtedly lead to increased cost, complexity and difficulty in gaining EU approval for the UK specification.
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.	Landis+Gyr considers that this is a natural and understandable step in consumer engagement with energy supply and consumption. We anticipate that consumers will quickly wish such access to be via the direct, local capture of such data via a secure 'bridge' into the HAN (most likely a one-way bridge to avoid security holes). Subject to appropriate definitions of access type in the security definition for the UK smart metering environment, access could be provided by a dedicated PC dongle, a modified IHD or via the consumer's communications hub.
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.	<p>The electricity meter should not be used as a safety device.</p> <p>Landis+Gyr's experience in other European markets shows that, to achieve such a capability in a failsafe manner requires specialist contactors and a manual isolation switch with visible confirmation of contactor engagement/disengagement. The cost and time implications of adding this functionality are non-trivial. Landis+Gyr would recommend an external isolation switch (ideally to an existing, proven design) be fitted during the smart installation process if such a facility is required.</p>
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	<p>See response to (39): Landis+Gyr believes that translation should be avoided if at all possible.</p> <p>Landis+Gyr believes further work is required to simplify the volume of translation activities imposed by smart metering system choices. Where possible, the need for translation should be removed entirely as an</p>

No.	Question	Landis+Gyr Response
		architectural imperative. Translation is a costly and risky system overhead and should not be allowed unless absolutely necessary. It should certainly not be an integral design feature.
49.	<p>Where do you believe that translation is best managed:</p> <p>a) At the Communications Hub; Or b) At the DCC?</p> <p>Do you have any economic, technical or consumer evidence to assist Government in evaluating the options?</p>	<p>See (48). Designed-in translation should be avoided wherever possible: protocol choice should be biased towards solutions that obviate the need for translation. Best practice in the IT world is to avoid it wherever possible. If translation or encapsulation is absolutely necessary, it should be done at the originating device. Accordingly, Landis+Gyr supports translation at the hub where it is necessary at all.</p>
50.	<p>Do you agree that the IHD should only be required to display ambient feedback based on energy usage? Please explain your answer.</p>	<p>A minimum specification IHD might have a minimum requirement to display ambient feedback based on energy usage. However, based on its experience in the field, Landis+Gyr believes that a relative view of consumption is far more appropriate: the rate x cost view is the critical measure – not simply the rate.</p> <p>Consumers must be supported in their attempts to move peak consumption to lower tariff periods and that can only happen where the relative cost of consumption is clear.</p>
51.	<p>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?</p>	<p>Landis+Gyr fully supports this concept.</p> <p>As a member of the SSWG, Landis+Gyr has contributed to work that has created the concept of the billing cluster – an information cluster provided by any and all billing devices within the HAN (not simply limited to gas and electricity meters). Calling this cluster is a means of allowing any IHD to recover both the 'total cost today' and the projected bill when it r(e)joins the HAN – either after having been disconnected for a long period or if a new display/data management device is introduced to the HAN.</p> <p>We believe that this cluster approach is the only practical solution to ensuring that the UK does not impose multiple levels of raw and developed information from each and every device in the HAN to support a range of consumer interaction devices – from the simple, basic IHD to the overtly complex PC based applications that will seek to exploit available HAN data.</p> <p>Having a single, standard information cluster means that IHD-level coding in order to process that information block can be simple and highly standardised, regardless of the end device's capability. Industry and consumers alike will then be able to benefit from an active, unfettered IHD/application development environment.</p>

No.	Question	Landis+Gyr Response
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?	This is a relatively low cost, high value attribute and should be required of all IHD's.
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.	<p>Landis+Gyr has concerns with regard to the data catalogue. To date there has not been any work carried out to assess the catalogue against standard application protocols for WAN and HAN (e.g. DLMS and SEP 1.X). We propose that DECC consider the approach here and request assessment from groups looking at metering equipment protocols e.g. SSWG as well as DLMS UA and ZigBee.</p> <p>There is a risk if this work continues based on the existing data catalogue without attempts to align with the existing protocols and planned extensions that we incur a significant (e.g. 6+ month delay) in defining the data items and protocol data objects required to be referenced from the SMETS.</p>
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.	<p>Landis+Gyr has argued throughout the consultation process that an assurance framework is required for both Foundation and Enduring deployment phases.</p> <p>The framework and its demands might well differ between these two phases, but for DECC and Industry to achieve maximum benefit from Foundation and to be able to use that benefit as a basis for decisions made with regard to the Ensuring programme, it is essential that deployments have some common, assessable basis against which to assess the impact of the (likely significant number of) non-fixed elements.</p>
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	Landis+Gyr strongly supports the development and implementation of a testing regime for both Foundation and Enduring phases. We believe that the work of the SSWG's HAN and WAN Working Groups as they continue to tackle the Interoperability Testing that the SSWG has targeted to undertake in the final quarter of 2011 could form the basis of such a regime. We would welcome the opportunity of working with DECC to define how it might best incorporate this work into an appropriate assurance framework.
56.	What are your views on the options outlined for a testing regime? Are there other options that should be considered?	The approach is likely to include aspects of all options in 215. See response to (55).
57.	Do you think that a different approach to assurance is necessary for the Foundation and enduring phases? Please explain your answer.	Landis+Gyr does not believe that the assurance process should be different between Foundation and Enduring phases. Rather, we consider that the scope of the assurance process might differ to accommodate the stage of development reached at different points of the UK smart programme.

No.	Question	Landis+Gyr Response
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?	<p>While we broadly support the work to-date outlined in this section we have a number of concerns relating to clauses 219 to 224:</p> <ul style="list-style-type: none"> • 219: While STEG was initially open to a wider review body, the DCC procurement restrictions make it difficult for most manufacturers to be part of the current process. We urge DECC to reconsider how manufacturers can be engaged in any further work to ensure the requirements will be applicable to embedded metering devices. • 224: We support the development of an overall trust model. However we do not believe the cryptographic key management needs to be designed at Government level. Instead, only high level requirements on functionality shall be given to the DCC operators and manufacturers (e.g. “devices shall support a hybrid scheme using FIPS approved ciphers”). Industry can then support the development of detailed specification along with work on the application profiles for WAN and HAN. <p>Regarding the specification of cryptographic primitives:</p> <ul style="list-style-type: none"> • The development of common cryptographic interfaces will only significantly support interoperability as part of the Application Layer protocol and associated data items linking the devices on the WAN and HAN. • A number of SBGI member companies are already working on addressing these requirements based on application layer protocol standards and where available European standards. Industry groups are well placed to take on this level of detail for the WAN and HAN protocols. E.g., via the protocol user groups in DLMS User Association, ZigBee SEP, supported by companies focused on GB requirements via SSWG. • UK Manufacturers in SSWG are already proposing a set of cryptographic primitives to be supported following the hybrid model. This should be an area where industry can lead the

No.	Question	Landis+Gyr Response
		<p>definition with validation by appropriate DECC personnel.</p>
59.	<p>Do you agree that cryptographic/ key management is necessary to secure the End-to-end Smart Metering System? Please explain your reasoning</p>	<p>We agree that, where keys are utilised, key management is necessary. Amongst others, these functionalities will enable a secure firmware update mechanism of devices, the provisioning of trust, on and offline key establishment.</p> <p>However as set out in (58) above we do not agree that the mechanisms for key management need to be defined at government level. Instead industry groups are best placed to take forward the technical implementation specification aligned with the work on extending application profiles. The resultant standards or proposals for standards can then be referenced from SMETS.</p>
60.	<p>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</p>	<p>We agree with the advantages outlined for the solutions and manufacturers are already developing and defining open interoperable solutions based on the hybrid scheme. We do not believe that further hardware is necessary to be mandated to realise the "asymmetric" or "hybrid" functionality for any mains powered devices and there are already meters and communications hubs becoming commercially available that utilise the hybrid scheme completely in firmware.</p> <p>Battery powered devices (e.g. Gas Meters) may also be able to use the hybrid scheme depending on the appropriate use of symmetric and asymmetric algorithms. We agree that, compared to a symmetric operation, the invocation of any asymmetric operation could significantly drain energy from those devices. Therefore, asymmetric operations are only proposed to be applied to critical commands (e.g. monthly billing meter reads, prepay top ups and tariff configuration). This is already the basis of the Security requirements in IDTS and is recognised in manufacturer work on application protocol extensions.</p> <p>Additionally we do not believe that mandating the use of a dedicated hardware security module will significantly improve security of an architecture where all devices use unique credentials and are physically sealed (tamper evidence). i.e. a physical attack will only affect one particular device. However, a mandatory use of dedicated hardware security could significantly increase the unit price as well as delaying design processes and foundation volumes. The required reliability of the cryptographic function can be achieved with the use of approved cipher implementations (e.g. FIPS).</p>
61.	<p>Do you think that it would be appropriate for the DCC to be responsible for cryptographic key</p>	<p>We agree that DCC is the most suitable location for key management associated with the Smart Metering System.</p>

No.	Question	Landis+Gyr Response
	management for the End-to-end Smart Metering System? What other options should the Government consider? Please explain your reasoning.	However, we suggest this does need to be tightly linked to meter registration. Further consideration will be required to ensure that links to manufactures are effective to support use cases for secure firmware updates and for return/repair.
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.	<p>We propose that advanced meters continue under existing schemes, once devices are opted in they should be capable of aligning with the security schemes outline above.</p> <p>We also recognise that the work to date in STEG and in the IDTS has focused on domestic customers to date. More work is required to review the non-domestic market and to avoid unnecessary constraints on the existing deployments of advanced metering, which in turn could delay the benefits to this market.</p>

3 Summary

Landis+Gyr understands the significance of **the consultation work with regard to the UK's smart metering programme**. Our response aims to highlight areas where the consultation could be refined but also where we believe Industry might be better harnessed by DECC in achieving **the best outcome for 'UK PLC'** from both the Foundation and Enduring phases.

We remain absolutely committed to the success of the UK programme and would welcome the opportunity of reviewing our comments with the DECC team in the very near future to see where we can offer concrete support to the programme.