

ESTA RESPONSE TO:



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

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ESTA Energy Services and Technology Association

ESTA is the UK Industry Body representing suppliers of products, systems and services for Energy Management. The 120 members cover energy consultants, aM&T providers, controls manufacturers through to full Energy Services/Contract Energy Management mainly working in the I&C sector.

ESTA is engaged with UK Government policies on Energy and Climate Change, The Green Deal, Energy Performance of Building Directive, Part L Building Regulations, Display Energy Certificates, Carbon Reduction Commitment, Energy Services Directive and the roll-out of smart and advanced meters. It also provides UK input to developing international energy management standards and Chairs several BSI committees.

ESTA members are key to the UK's realisation of a low carbon, secure and affordable energy future. Our members provide equipment, systems and services for energy management to reduce energy demand at source and including renewables.

Our response is a majority consensus of the members involved. Where ESTA members respond directly, they may offer differing opinions on some issues which we respect as expressing their own definitive view.

Consultation on the second version of the Smart Metering Technical Specifications

ESTA welcomes the opportunity to respond to this consultation and continues to provide its support for government incentives forwarding the energy efficiency, energy best practice and demand side reduction agenda.

ESTA believes that DECC have a prime responsibility to ensure members of the public obtain the maximum value for money from their energy needs. Our expertise in the demand side reduction arena continues to highlight concern for the execution of the programme in a number of areas:

1. The SMETS specification is largely drawn up by the supply-side of the industry with very little (comparatively) consumer representation.
2. The roll-out of the programme is highly dependent on the detail of SMETS, to the exclusion of features that have not yet been included in the specification (e.g. water, heat, detailed demand control and energy export). To include them later will require major revision and cost.
3. The implementation is dependent on part on a 'closed' group of meter vendors and communications companies (SSWG), from which there is little indication so far that technical interoperability will be achieved within the time-scales required.
4. The procurement process for DCC, including DSPs, CSPs and Comms Hubs is well under-way, but ESTA have seen little expertise in the favoured parties, and our members have generally not been engaged in negotiation for technology based solutions. This is disappointing because ESTA members have are industry leaders in metering, AMR and energy reduction techniques.
5. We are continually concerned about the in-house expertise within the DECC SMIP team, that senior members of the programme are seconded from consultancy companies for the duration of the programme and are not long-term civil servants. Whilst we accept assurances from DECC on impartiality, we believe DECC should and must have in-house metering and communications technology expertise in all areas of the programme in order to see out the medium and long term scenario. Responsibility and accountability is a key part of such a large project and all key decisions should be made by internal DECC personnel.
6. DECC continue to endorse the roll-out of SMETS1 type meters that are non-interoperable and are equipped to shut off supply to the consumer. This leaves the consumer with little recourse in the case of dispute as well as an installed meter superceded by one SMETS2 compliant.

7. The programme has taken very little account of existing installed industry AMR systems and processes. This could result in duplication or conflict if the DCC is to provide the lowest cost infrastructure.
8. The access to data for the consumer is likely to be restrictive and over-complicated.
9. The DCC industry days in August highlighted an apparent disconnect between those specifying the DCC (DECC) and those paying for it (Suppliers).

Further to the above points, set out below are responses to the specific questions in the consultation.

HAN Application Layer

Government Position

The proposed application ("language") layers to be specified in SMETS 2 for the HAN are ZigBee SEP (for gas & IHD) and DLMS (for electricity). Suppliers will be required to demonstrate compliance against SMETS and a GB Companion Specification.

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

ESTA partially supports the analysis presented in sections 10 – 45, but it is not in sufficient detail to properly comment. Over the course of the programme ESTA have generally had difficulty obtaining participation in the analysis and therefore still have major concerns.

The main criteria appear to be conformance to a standard and current extent of use. Neither SEP nor DLMS are standards, because the UK implementation depends on a Companion Standard that is yet to be written. Such a Companion Standard is being developed by a closed group SSWG which ESTA is not a member of. Mandating something that is incomplete and controlled by a closed group is unlikely to provide best value to the consumer. There are no current implementations of the GB Companion Standard so DECC cannot claim any extent of use.

That said, the advantages in identifying a preferred (with limitations) solution outweighs the disadvantages of uncertainty. However, we emphasise the need to ensure the standard remains open, accessible and enduring for future requirements. This often gets overlooked after a decision is made and will need constant monitoring by impartial experts. We do not currently see evidence that this will happen.

In addition, the main criteria have not been sufficiently developed or discussed within the main HAG working group and it has been felt that there has been a lack of funding for thorough testing in order to understand practical implications.

Zigbee SEC / DLMS provide an appropriate basis. However, development of the Zigbee specification is moving towards v2 which will have the capability for IP addressing. This

brings features and benefits more suited to a more advanced implementation of smart metering, as currently emerging technologies such as e-mobility and small scale generation become more mainstream and widespread.

The selection of Zigbee SEC v1 seems to be driven by its lower power consumption and therefore battery life rather than a more in-depth evaluation of the comparative medium to long term capabilities.

It should also be noted that Zigbee is a mesh protocol, whereas a point-to-point protocol is more appropriate in the home environment. Mesh support could be removed, considerably reducing overhead. Some UK meter vendors have implemented their own versions of Zigbee and there is an opportunity to produce a cut-down version specifically for the UK market. This will be useful in the implementation and speed to market of a sub-GHz option.

We would propose that consideration to be given to adopting the v2 standard in the hub and other HAN elements, but with the option of limited v1 operation to the gas meter where the increased battery life is important.

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

Yes, we strongly support this.

DLMS is a well-established protocol in the electricity industry; the expansion of the protocol to gas metering is technically possible, however, it is a complex protocol that is not optimized for battery powered equipment. As such, it is totally unsuitable for Communications between the gas and the Comms Hub. A separate protocol should be used here, possibly based on existing practice as used by data loggers.

By contrast, Zigbee is an overly complex protocol, the subset known as SEP, is unlikely to be useable outside this framework application. Much of the experience with Zigbee is from the US. Where, typically US housing stock is of lower density construction (timber, no foil-backed boards, etc) and metering in the majority of cases external to the house. Its implementation in the UK could see a potential failure rate approaching 50% for radio devices using 2.4GHz as the carrier frequency. WiFi also occupies this band and operates at a higher power than Zigbee. Even so many Wifi users see connection problems only solved by adding repeaters or additional infrastructure.

With that said, ESTA believes in addition however, the proposed implementation is far too bundled and therefore poses a huge risk on escalating costs and extended delivery time-scales. The model requires the specification to be complete and exact before build can start and ESTA question whether this is achievable.

Referring to Fig. 1 (in appendix) there are 10 steps between the Business Process definition and implementation / build. These will be iterative and there are several other inputs including existing data definitions and security requirements. The 2nd step (DDS) is not yet fixed. For example, at the SSAG meeting in early October we were still discussing

the field size necessary for a supplier name and phone number. If this detail is required across SMETS for each data item then this model will not quickly succeed or be implemented.

ESTA believe that DECC should split the application layer more clearly from the underlying generic components on which SEP and DLMS are based and make this an obligation. This will provide a much more stable platform on which the DCC services can be built.

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

ESTA believe a full and complete specification is required. However, we do not see that this will be achievable at the same time by all parties to establish interoperability in the time-scales required. Many data items have been in discussion for two years or more and are likely to continue to be until the system beds down. ESTA therefore see that mandating the lower generic layers of SEP and DLMS is more important. It will allow the Comms Hubs and Head-Ends to be built and the DCC to be implemented before the specification details have been resolved. This is already provided within SEP (tunnelling), and the generic DMLS protocols already used in UK meters, but it must be clarified so that it can be used by the wider business community.

The roll out must achieve the projects aims and therefore the lowest percentage failure rate and lowest overall cost is necessary to build in consumer confidence. It is ESTA's view that a viable solution (i.e. with low failure rate) should be developed prior to roll-out even if delayed.

HAN Physical Layer

Government Position

It is proposed that solutions based on 2.4 GHz technology and solutions based on 868 MHz technology should be permitted. The Government is not at this stage persuaded of the case for mandating either 2.4 GHz as the only solution or moving towards mandating a dual band communications hub. The Government is therefore seeking views on whether a market led approach, with steps to incentivise the development of an alternative wireless solution, will deliver the optimal solution.

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

ESTA recommends that the focus should be on the solution and process for the installation of single fuel smart meters to ensure the first fuel supplier installs the appropriate solution to enable the other fuel solution to connect without changing the technology.

We remain concerned that the HAN is currently the only mandated local interface to the meter which makes its dependency a huge risk. Why has the optical data port been abandoned? – It has served the digital metering industry well for 30 years. DECC have recently identified a requirement from suppliers to be able to do everything that can be done by the WAN using an HHT. The HHT currently uses the optical port and security experts have established that this need be no less secure. The optical port is also an ideal interface for the intimate comms hub. ESTA recommends that the optical port or an additional mandated local interface is included to ensure fail-safe data access to the meter in the case of Zigbee/SEP not being able to provide required functionality.

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

The evaluation criteria concentrated on the relative impacts of frequency on range and penetration with minimal practical consideration of the modulation schemes. Whilst the results clearly show the benefits of a sub-GHz HAN there may have been a reduction in the differentials if suitable modulation schemes had also been taken into consideration.

There has been an emphasis on the bandwidth required for remote reprogramming (OTA) which has precluded lower frequencies, such as 184MHz for which the UK is already licensed to use in AMR. With proper configuration parameters in the meter, OTA is unlikely to be necessary and its provision creates a huge risk on security and reliability.

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

We would support every attempt to secure this spectrum for HAN usage as it eliminates cross-interference and maximises performance. However, any solution must also be able to support the unlicensed section of spectrum as there is no guarantee of gaining a licensed element and if unlicensed bands are used, there is no reason why the consumer should not install a wifi booster next to the meter. ESTA strongly believes however that work on sub-GHz should be in parallel and at the same intensity to that of the 2.4GHz option.

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

Yes, a perceived small UK market will not drive development. Without readily available solutions deployment will leave difficult properties to later until the volumes are quantifiable.

The requirement to develop dual band at an early stage would reduce this possibility and minimise stranded costs. Where a 2.4MHz comms hub is fitted but does not support a second fuel installation then it can be exchanged for a dual band comms hub without compromising the initial meter and IHD that has been installed and the CSPs 2.4MHz comms hub can then be redeployed in another property.

The use of only 868MHz (with 2.4GHz just reserved for SMETS1) has been dismissed because of the reported delay to the programme by SSWG. However, ESTA believes there is opportunity to move to an 868-only scenario as the current application layer model to deliver SMETS2 will take longer.

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

Yes but CSPs should be mandated to supply a sufficient volume of dual band comms hubs and a commercial approach needs to be developed to avoid dual band (with its higher costs) becoming the preferred option for installers.

The market is currently dominated by only one early adopter, who is currently installing in "opted in" sites at 2.4GHz. We cannot see how the market alone will develop from this, in particular diverting from the frequency favoured by this adopter.

ESTA still believes that had the evidence and considerations provided by experts in relation to this frequency issue be given a full and complete debate and hearing the programme would be much closer to finding an 868MHz or reserved frequency solution.

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

Option 1 is messy with the use of repeaters or wired solutions, the HAN reliability could then be compromised (if consumer power is required) or wiring is used.

Option 2. Dual band would not help the consumer to purchase the correct products to interface with the hub as the consumer would be unaware which frequency would work for an appliance etc. This would lead to non-metering products probably defaulting to 868MHz to ensure compatibility with all properties.

Option 3. This will create a challenge for single fuel installations leaving the risk of stranded asset costs when the second fuel installation will not work with a 2.4GHz hub and both the hub and the initial meter will require changing.

ESTA continues to endorse that 868MHz becomes the standard (ensuring that all devices can use the HAN). Early deployment of a 2.4GHz only HAN would distort the market by encouraging 2.4GHz consumer devices to be used when 868MHz is the desired position for interoperability in the longer term. The programme should seriously consider the exclusive use of 868MHz (which has proven successful in almost 0.5 million sites) as well as working on the existing solution becoming interoperable.

This is likely to be faster than ongoing engagement with the Zigbee Alliance (USA) and DLMS User Association (Switzerland) both of which are not under the control of the programme. In discussion with BSi, such a UK standard could be formed and submitted to EU as a sub-set of existing standards. Such an initiative is likely to be attractive since

the UK is the only country that works on the supplier-hub commercial model – all other countries have metering under the distribution arms.

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

Where the installation is being pursued in a standard dwelling and standard equipment is sufficient it would seem reasonable to consider that the first installation is undertaken using standard equipment that can be utilised by the other. This can clearly be accommodated particularly where the electricity installation is undertaken first, due to the connectivity of the comms hub, but must be questioned where gas is installed initially from a practical perspective.

Where a multi-dwelling property is considered, potentially requiring a survey and a specific design then the obligation should be less onerous. The most practical implementation in this instance would appear to be CSP led with the ability to implement a solution and leave the building 'CSP Ready'. However, it is recognised that by undertaking installations in this space as specific 'Projects' that co-ordinating the Energy Retail activity and CSP activity would provide the most cost effective and customer focused way forward.

Fit-for-purpose is essential for inter-operability to protect the customer from having equipment he has effectively paid for from being discarded and replaced by something else he will have to pay for. Also, fit-for-purpose must be clearly defined and include the ability for the customer to use the equipment to achieve energy savings.

Also, ESTA believe the customer must be refunded in full if an incoming supplier cannot support the existing smart meter. This also applies to charges the outgoing supplier may make for ongoing maintenance and support of the existing meter under commercial interoperability arrangements. These must be the same as the outgoing suppliers internal costs, and this must be provable.

Wired HAN

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

A wired HAN solution does provide an option to overcoming communications issues created by different building materials and metering positions and does not create a significant diversion from the standardisation being proposed. ESTA are therefore supportive of the proposed approach and would wish to work with DECC on developing a wired HAN solution as part of DECC's HAN trials either through powerline carriers or hard wiring.

It again emphasises however, the need for standardisation at the lower layer – no PLC provider provides Zigbee compatible technology as we understand, and to incorporate it will be onerous. However ignoring the "wired" requirement, or leaving it till later is not an

option in ESTA's opinion and must be included within the SMETS2 implementation. Early detailed dialogue with the Zigbee community and PLC vendors will be essential to make this happen. Currently, there has not been sufficient activity in the HAG working group on this area.

Communications Hub - requirements

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

ESTA agree with the proposed scope for 'standard' communication hubs. However, we believe that the solutions for difficult buildings – particularly high rise where the HAN set up will need a non-standard infrastructure – requires special consideration. The hub also needs to support connection to other micro-generation meters and facilitate fault finding and logging of communication 'tries' to HAN devices. These must be included in the SMETS2 standard.

Essentially though, the communications hub is a transparent hub passing data between the HAN and the WAN. ESTA believe that mandating or allowing additional functionality in the comms hub will complicate the integration tasks and become a barrier to good interoperability.

ESTA still question the need for a "mirror hub" and the necessity for data from battery equipment to be instantly available over and above what can be achieved through the use of standard gas meter pulses as the wake-up source to achieve the overall requirements in the government mandate.

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

The key consideration is to ensure that the intimate interface is fully secure and unable to be tampered with, as well as being truly interoperable across the full array of compliant electricity meters. The optical port is ideal for this purpose as it exists today, uses few low-cost passive components, and meter vendors are familiar with its manufacture.

Communications Hub - responsibilities

Government Position

The Government considers that on the basis that the costs for installation and maintenance would lie where they fall the balance of advantage lies marginally in favour of the CSP-led model. The Government seeks views on this position, in particular from energy suppliers as to why they would not be better positioned to fund, own and operate the communications hub against a specification provided by the CSPs.

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

ESTA share a marginal preference for the CSP provided comms hub, but are aware that many CSPs have not been embedded in the energy metering arena. The step change from simply transmitting over an open pipe to managing the procurement/development, installing and commissioning of a comms hub will not be easy. The comms hub will need to demonstrate a high level of interoperability with the meters that the energy suppliers have purchased and the accountability for this will be difficult to challenge. Who is at fault if a comms hub is not compatible with a particular meter?

The advantage of a supplier-led model is that the procurement will hold the meter vendor and comms hub provider jointly accountable for the equipment working properly together. However, there will not be the same driver for interoperability with other equipment. There is no "perfect" solution and the split accountability for the HAN is far from ideal but an unavoidable result of the market model.

Specific consideration should be given to difficult building/high rise units where specialist HAN arrangements are likely to be implemented. In this scenario it makes most sense for the CSP to be accountable for the maintenance of the HAN as in this case the HAN is essentially an extension of the Wide Area Network - a Neighbourhood Area Network (NAN).

We also believe that the CSP route is easier from a financing point of view as the comms assets economic useful life is potentially driven by the comms contract life rather than the meter life. The supplier led model would presumably require the MAP to invoice it for the rental on a comms hub which the supplier would then need to pass on an element of to the other fuel supplier. Commercially we believe the CSP model is simpler, although the details of supply and tracking of the assets needs to be worked through.

Communications Hub – opted out for non-domestic consumers

Government Position

The Government proposes that in the case of opted out non-domestic customers, the energy supplier should not be required to install a CHTS-compliant communications hub. The Government also proposes that at opt in and opt out the then registered supplier (likely to be the gaining supplier) should bear the cost of installing a new communications hub.

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

ESTA agree with the Government position on not mandating a CHTS compliant communications hub in non-domestic installations.

We agree that there is a competitive market between both Energy Retailers and Meter operators / data collectors, that operates efficiently and which facilitates the provision of energy data in a format that better suits this range of customers. Likewise a sensible approach is additionally required to support the significant investment in 'Advanced' meters that were installed in support of the governments CRC obligation to ensure that asset rentals are not cut short as this could have a negative effect on attracting investment into the future.

It is important that customers that opt out know their costs and those they are avoiding, so that these can be compared against benefits. If smart metering and DCC costs are absorbed in a supplier's bill, then the customer will not be able to discern the value. This will prevent opting out. The provision to opt-out must not be hampered by this – suppliers must be mandated to itemise the true costs to the customers of the mandated SMIP.

ESTA strongly recommend that government do not allow suppliers to charge consumers penalties directly or indirectly if they opt out as long as they are willing to serve suppliers with their meter readings in a reasonable manner.

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

ESTA agree that where the customer has not expressed a specific position themselves and where the Energy Supplier chooses to switch from an "Opted out" to an "Opted in" position the obligation should rest with the Energy Retailer.

However, in the non-domestic space consideration should be given to the customers wishes and should not be automatic, particularly for those consumers who have their own metering and data collection contracts. Consideration should also be given to the preservation of "Automated" metering assets, as premature removal could damage future investment.

Additional DNO Functions

Government Position

If the proposed option for communications hub responsibilities (i.e. CSP-led) is confirmed, the Government proposes that the design and implementation of outage reporting should be assigned to CSPs (through DCC licence conditions) who may choose to implement it either in the communications hub or in other components of their solution. The ability to log the time of outages and the restoration of supply was included in the smart electricity metering system in SMETS 1 and will be carried forward to SMETS 2.

If the supplier-led model is adopted, the CHTS would be included in SMETS and suppliers would be responsible for procuring SMETS compliant equipment, including the functionality to perform outage reporting.

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

No. Meter vendors have provided this facility since digital meters were available – there is no reason to change this now. Any additional functionality in the comms hub will compound the difficulty of functional separation and interoperability.

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

It is important that meters provide this functionality as standard and as previously stated, a consumer will also find outage reporting useful. Whether a consumer makes use of the facility through his non-DCC WAN should be down to the consumer, but there may be pricing incentives the supplier could offer for the consumer to provide an outage status.

Government Position

The Government proposes to include maximum demand registers in SMETS 2. Two registers would record maximum import demand and a third would record maximum export level.

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

Yes, MD registers must be included in SMETS. ESTA believe smart meters should be as future proof as possible to avoid meters being changed from functionality redundancy. Therefore if MD registers may be required in future billing scenarios then the meter should deliver this information. However, we see no reason why this cannot be delivered through back office systems if a minimum half-hourly resolution was acceptable.

MD registers can be set as configurable options, the same as currently. If a local display is required then this could potentially be achieved by a specialised IHD or from a message from the Energy Supplier. The costs of implementation in the meter are minimal, a few extra bytes of memory and code space. To implement in the back-office system at a higher resolution than half-hourly will be a load on DCC traffic and associated costs.

Government Position

The Government proposes not to include the capability to set configurable voltage alert counter thresholds, in SMETS 2.

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

Decisions such as this would ideally be left to the market. UK plans seem to suggest that the future intent is for distributed renewable micro-generation (encouraged by FITs), and therefore the risks of excessively high local distribution voltages and local distribution voltage variations increase significantly. The ability to generate such alerts would allow quick and early identification of any problems thus limiting the cost of any subsequent damage — both to the distribution systems and to consumer equipment.

Meters could include the facility as configurable options and the DCC could provide the service if available and required. There are many other features that will fall into this category and will require flexible support from the DCC.

Government Position

The Government seeks views on whether logic to control disablement functions by multiple parties should be specified in SMETS 2. This might provide future-proofing in the event that DNOs are at some future date permitted to execute such functions as part of their smart grid activities.

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

ESTA believe the responsibility and privilege of remote disablement should lie with the DNO alone. The contractual and liability implications are far too complicated otherwise. A supplier can request remote disablement from a DNO as part of the service provision if required. ESTA is assuming this reference is different from disablement due to lack of funds in pre-payment mode.

Government Position

The Government proposes to include variant smart electricity meters in SMETS 2 to address requirements for auxiliary load control switches, boost buttons, multiple measuring element meters and polyphase supplies.

Question 22: Do you agree that variant smart electricity meters should be specified in SMETS 2 and that the cost uplift for variant smart meters is similar

to that for variant traditional meters? Please provide evidence of costs to support your views on cost uplifts.

Yes, SMETS 2 should cover variants. This will remove any uncertainty that a variant meter is SMETS compatible. Since parts of variant functionality is separately programmable then the DCC needs to be able to recognise and deliver commands and events to manage these functionalities, e.g. a voltage alert on one phase or a failure of a load control switch on a dual element meter. Cost uplifts will be related to additional physical hardware required (e.g. contactors, additional electronic components) rather than software/memory or additional DCC Service implementation which are likely negligible.

Government Position

For smart electricity meters with internal or external auxiliary load control switches, the Government proposes that the following capabilities are included in SMETS 2:

- *randomisation of on/off switching of auxiliary load control switches*
- *randomisation of switching between registers (i.e. of price changes)*
- *ability to align the switching of auxiliary loads with the switching between registers*

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

A randomisation offset is important and we agree with the proposed range of offset. However, there is an important safety requirement that the actual status of load control switches can be accurately determined at all times. It may therefore be desirable that the offsets for individual loads should at least be known by, if not determined by, the central system.

Randomisation has been used by Radio-telemeter products for many years – the design has been well thought through. ESTA recommend a similar approach to smart.

Interface Requirements

Government Position

Work to date indicates that the two options presented above are potentially viable means of connecting a CAD to the HAN although they display different advantages and disadvantages in relation to the objective of achieving 'secure and consumer-friendly' connection. Both options require further detailed analysis but views are invited on these options and on any alternative proposals.

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

In the special case of high-rise/multiple-occupancy buildings we do recognise that special measures may be required to ensure that CAD's are correctly paired with the consumers' gas (mirror) and electricity meters accurately.

However, on balance Option 1 is the preferred solution. Notwithstanding the overriding need for security, the process needs to be quick and simple. We believe that the concept of a "numerical key" is well understood by consumers and that they are capable of handling their own keys with appropriate diligence.

Option 2 has three significant drawbacks. (1) it introduces one or more third parties into the loop and places the obligation of "consumer authentication" upon them. (2) it is likely to take longer than option 1. (3) it introduces a new high-priority near-real-time messaging requirement for the DCC and its service providers. And although, Option 2 does potentially offer higher levels of security within the system, it does not solve the problem of consumer authentication; simply transfers this obligation from the supplier to a third party.

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

We believe the CSP should provide this service. We do not see the need for energy suppliers to be involved in the process unless they are the "nominated SEC party". It is the role of *nominated SEC party*, not that of *energy supplier*, that is relevant. There is a competition issue here.

Energy suppliers may choose to compete in the hitherto open market for energy services in general. Clearly smart metering is a key factor in the enabling of a wide range of energy and building control services. A consumer request for access to his smart metering data may therefore be seen as a qualified sales lead to a competitive supplier of these services. It is not acceptable that such leads should be re-processed exclusively by one sector of the competitive services market. We therefore see a compelling need to ensure separation between a party's role in enabling a consumer to exercise his right to set up a new system, and the party's role as a vendor of energy seeking to enter the related services market.

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

Option 1 as stated is the preferred approach. It puts the consumer in full control and allows responsibility to be taken for their own arrangements with or without the services of third parties including the current energy supplier.

Government Position

The Government proposes that the specification of a PPMID is included in SMETS 2. The PPMID will replicate functionality of the user interface of smart gas and electricity meters using a HAN communications link.

Stakeholders are invited to provide information on the safety and cost implications of including the enable supply command in the PPMID specification.

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

Perhaps, but there is no consistency in functionality required and not specified properly as well as functionality probably not required. ESTA re-iterate that the SMIP model should allow for development of new features and functions and the re-iteration of the flow diagram shown in Fig 1. during and after the mobilisation of the DCC and HAN. Achieving a set specification from the outset will be a never-ending task and is rarely the scenario for any coms based equipment.

Specifically however, the PPMID will be like a TV remote (always getting lost). Will the business be able to support quick and easy replacement at reasonable cost?

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

ESTA believe detailed prepayment requirements like this are a distraction from the main purpose of smart metering – i.e. better information to the consumer to improve his energy best practise.

Government Position

A SMETS-2 compliant electricity meter could in future be used as a microgeneration meter and Government proposes that CHTS-compliant communications hubs should be specified such that they will support multiple SMETS-compliant smart electricity meters. In future elective services may be developed by DCC to provide access to microgeneration meters at FIT metering points, thus providing the same support for microgeneration meters as will be provided to import/export meters.

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

We can envisage meters being required for different generation methods e.g. Solar PV, micro-CHP, micro wind, storage supply to grid and mini-hydro. We also envisage that Smart Cars may need separate meters for both import and export (the import meter may

need to be a subtract meter for settlement purposes to enable a fuel agreement to be separate from the household supply).

ESTA do not believe there needs to be minimum limit on the number of smart meters the comms hub supports – this is likely to be a digital addressing issue, and would therefore suggest 16 or 256.

Government Position

The Government acknowledges that HHTs can facilitate installation and maintenance activities and that a standard specification of an HHT interface to the HAN would assist suppliers and MOPs to work interoperably across SMETS 2 / CHTS-compliant devices. It is proposed that further specification work is undertaken before finalising whether an HHT specification is included in SMETS 2.

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

If there is no optical port, the specification for a HHT interface to the HAN should be defined. However this will delay the finalisation of the HAN.

It has been made clear from previous information from DECC presented to the HHT interface working group that the HHT interface must meet the current smart metering security working principles.

As currently determined, these principles exclude the connection of an HHT to the SMHAN without WAN involvement and local configuration of a meter by an HHT via the SMHAN. Revision of these principles to enable these functions would only be considered if it can be shown that the impact on the business case of not allowing those options (number of revisits and/or meter replacements) outweighs the security compromise of enabling local configuration by an HHT and/or connection of an HHT without WAN involvement.

A full analysis would include an estimate of the % of installations where the temporary unavailability of the WAN connection would require a repeat visit or meter replacement, which can only come from the CSPs and the (forecast) coverage of their WAN technology.

Definition of a HHT interface standard should allow the development of a standard application for HHT irrespective of the smart metering technology equipment installed (in line with the HAN standard for smart metering). This HHT 'comms app' could then be integrated with the HHT job management application to allow the capture of data via the machine-to-machine link (HHT to smart metering system component via the HAN) to complete meter work jobs by the installer securely and without the risk of data errors through manual entry by the engineer.

In addition, more complex and greater amounts of data could be exchanged without detriment to the productivity of the engineer. This outcome requires that the speed and ease of communication over the HAN is suitably optimised, balancing security needs of the smart metering systems with the productivity of the engineer.

Smart Meters requirements

Government Position

It is proposed that the maintenance of smart metering security requirements will be best achieved through a technical sub-committee to the SEC Panel, comprising security specialists from Government, industry and other interested parties. This subcommittee would draw on input from SEC members, especially the risk assessments that they produce: the technical sub-committee is not expected to undertake a separate risk assessment.

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

ESTA largely concurs with the government's approach to the governance of security requirements. However, we are concerned about the late engagement of stakeholders in the process.

The detailed design is becoming more and more dependent on the output from STEG, and ESTA believe the security approach is more centric around the banking model than the meter model, often using the wrong experts.

Cash machines have PCs in them with the necessary supporting infrastructure – meters and comms hubs don't have that luxury. ESTA believe the security approach should look very much at the limitations of comms design, hardware, current business as usual and mitigation of risk rather than specifying a security approach first.

Meter vendors have implemented their own security algorithms in digital meters with local data access for over 25 years with little evidence of attack. We must concentrate on the critical issues here – the use of the WAN for widespread disablement. No other function comes near this. Prepayment credit tampering is secondary because we still have the meter index to rely on, which is always read-only.

ESTA urges the programme to consider treating remote disablement exclusively as the main security threat and one for which national infrastructure is involved. All other features and functions can reasonably be dealt with via security provided by meter vendors to energy suppliers in their product offerings. This is what currently happens in prepayment.

ESTA do not see why a national infrastructure should be invoked in order to protect a supplier's credit / sales ledger. They are commercial companies, not public bodies and should be able to cope separately and to the same risks as other commercial

organisations. Above all it should not prevent competition and ESTA do not believe this issue should be taking up so much government resource.

Independent assurance of DCC and DCC Users

Government Position

It is proposed that DCC and DCC users' systems should be subjected to independent assurance against the security requirements. In the case of DCC users, certification requirements should be set in relation to the role code of each user. Re-testing of DCC and DCC users' systems should occur at least at set intervals and more frequently when significant changes to systems or to security requirements are introduced.

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

ESTA agrees with the proposal to establish independent assurance procedures for DCC and DCC Users. This should cover such aspects as readiness to commence testing (at market introduction), readiness to mobilise (i.e. following successful proving that each participant's systems & processes are ready to operate with DCC) and areas of major change after mobilisation.

Approval would take the form of an accreditation to join the DCC and costs would have to encompass testing and successful proving of readiness and management from legacy to DCC operation.

As a minimum the costs would need to cover central accreditation, costs of preparation and potential input and assistance from other industry bodies.

ESTA believes that there is significant market distortion as a result of the supply-chain / preferred vendors into the Big 6 and an independent assessor would ensure that all users of the DCC were able to receive equal benefit.

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

Whenever major changes are made analysis of risk should dictate the amount of re-testing needed. Some changes will require a major regression test and it would be expected that a central team will coordinate manage the cross-industry test activities, most likely the DCC or DSP (as an agent of DCC).

This re-emphasises the need for the DCC to support SMETS functional changes without revision. Often the changes are related to meter and head-end driver only. ESTA cannot

see why comms-hub, HAN, and the standards communities cannot be involved every time there is an update. It is counter-innovative.

Independent assurance of smart metering equipment

Government Position

It is proposed that an independent certification scheme is established to validate that smart metering equipment complies with the security requirements. Certification would be a mandatory requirement for SMETS 2 equipment and the CSP-provided communications hub. SMETS 1 equipment may also be certified under this scheme as part of the process of determining eligibility for enrolment in DCC.

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

ESTA agree that an independent certification scheme should be established for the certification of compliant solutions to an agreed minimum standard. Due to the range and complexity of the functionality ESTA propose that competitive forces are allowed to prevail to ensure that a range of cost effective and professional testing providers are established. We remind the programme of our position on supply-chain though, in other words, professional testing providers must be independently funded.

Government Position

It is proposed that sanctions for non-compliance with security requirements should be defined in the SEC and might include withdrawal of DCC services to a DCC user or to specific devices.

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

No comment.

Government Position

It is proposed that suppliers operating SMETS meters outside of the DCC should be obliged to operate a secure end-to-end system and require them to carry out a number of recognised industry good practice disciplines for identifying and managing risks to the security of their systems.

Question 36: Do you agree with the proposal to, in effect, extend the arrangements already proposed for SMETS installations prior to DCC operation,

to all installations being operated outside DCC? Please provide evidence of the costs that might be incurred and the impact of this approach on small suppliers.

ESTA supports the proposal that security should be at a similar level to those meters within the DCC for meters that are proposed to migrate to the DCC or are SMETS compliant but have opted-out.

However, where advanced meters have been installed in opted out sites in the non-domestic sector we do not believe it is necessary to impose DCC security standards; particularly as the data held on these meters would not be personal and the meters may not have disconnection facilities within them.

ESTA believe it is essential that such meters have a mode of operation outside the DCC, so consumers can opt-out or opt-in quickly and easily.

Additional Certification requirements

Government Position

The Government recognises that interoperability is central to the delivery of the business case for smart metering and proposes that governance of SMETS assurance is established within the SEC. One output of the assurance process could be a list of 'approved products' which are permitted to connect to DCC.

Government proposes that, as a minimum, two certificates will be required as evidence that a device is SMETS/CHTS-compliant: a security certificate and a GB Companion Specification certificate.

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

ESTA agree with the government's view that interoperability is central to the development of a successful smart metering solution both commercially and technically.

We strongly support the implementation of standard testing solutions for interoperability as part of a GB companion specification and as a minimum, but as long as competitive forces are allowed to operate in order to create a cost effective range of service providers.

ESTA are concerned however about the interests of those currently empowered to deliver interoperability, namely the suppliers and the meter vendors. Any inclination to close off access by others for commercial benefit would be inappropriate in a licensed monopoly model. In other industries, successful interoperability has been established by the appointment of independent experts – wide ranging stakeholders with a deep technical and commercial understanding of the products and procedures. ESTA believe for the

delivery of interoperability in the public's best interests and value this also need to be the case here.

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

Yes – ESTA fully support the provision of an 'approved product' list provided that approval is given independently and against specifications.

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

The provision of certification to a GB Companion specification should provide a minimum level of assurance that a product will meet interoperability levels, sufficient to satisfy all market participants, and the degree of assurance will be gauged by the depth of the specification and approved testing.

Due to the number of variants anticipated, this type of testing cannot satisfy all of the combinations possible and individual market participants may undertake specific additional testing of their own. These options should be made available but should be specific to each market participant and do not need to be included in the basic certification.

The difficulty however will be in defining the base specification and to exacting details to ensure identical operation in each metering combination. Refer again to Fig 1. – this process and re-iteration will be needed.

ESTA do not believe this is achievable by defining (even a very basic set) completely and urge the programme to further consider the option of interoperability of lower level protocols of which we know the proposed protocols are made.

Government Position

The Government is not proposing to introduce an overarching interoperability licence condition at this stage, but this position will be kept under review.

Interoperability Licence Condition

Government Position

The Government proposes to introduce licence conditions to ensure that domestic consumers can access, free of charge, the full range of IHD functionality, as set out in SMETS. For domestic consumers and micro-businesses enrolled in the DCC, it proposes

that energy suppliers should ensure that all consumption, export and tariff information held on the meter is made available over the HAN and that suppliers take all reasonable steps to establish and maintain a WAN connection between the meter and the 'head-end system'. Larger non-domestic installations and other non-domestic meters not enrolled in the DCC will not be subject to these operational licence conditions.

The Government proposes that these requirements should apply to the installing supplier from the time the operational licence conditions come into effect. Energy suppliers that gain customers with a smart meter would have to deliver the requirements once the meter had been enrolled with DCC or for domestic consumers not enrolled in the DCC, by the end of December 2019.

The Government also proposes that energy suppliers should be required through the SEC to configure smart metering systems enrolled in the DCC so that the DCC can offer services to other SEC parties. The obligation would also apply to domestic smart metering systems that have not been enrolled in the DCC by the end of 2019.

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

ESTA believe the supplier is the best party to provide enduring access to the meter via the HAN because he has the greatest consumer engagement. However, since demand reduction is contrary to a suppliers' standard business model the provision will need on going policing. There are many competitive elements here as well as innovative solutions that the consumer could have access to which may be thwarted by an inflexible and limiting CAD. A good accessible standard will be essential which must also be stable and future proof. ESTA have yet to see such a proposal and there is not much time.

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

We believe that the services offered by an energy supplier to a micro-business over and above those that they are obliged to offer to domestic consumers is a matter for the energy suppliers themselves and does not require additional regulation; apart from to provide a level playing field for any new service they may be competing for.

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

As far as can be seen, however, there is no single complete record of the stated policy intentions. The recent SMRG meeting confirms that there are still a number of deep issues that must be resolved and ESTA will be responding to the consultation on the SEC, and taking part in on-going dialogue with the programme to ensure the roll-out provides best value and drives best energy practice.

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

ESTA supports the proposals as outlined in sections 226 to 229. However, we believe there will be many new requirements emerging as the use of system changes, and improved energy practices are developed. These must be implemented quickly and at low cost in order to ensure or reduce existing network stress levels. The DCC must support this.

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

ESTA supports the proposals as outlined in section 229. We draw DECCs attention to the I&C gas model where data commissioned by the consumer is served to the supplier. This activity does not exist in electricity and should do, to ensure the operation of smart metering is continually challenged and improved.

This will make regulation easier. However, it is currently fiercely protected mainly by what is acceptable to a supplier depending on whether the provider is operating in an area the supplier considers competing. Such practice is only obvious to those parties offering these services, who have little voice, but it should be discouraged. ESTA emphasise the need for maximum independence of the assessing parties.

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

ESTA agree with the proposed changes to the smart metering regulatory framework to reflect the CSP led model. However, in line with our previous comments we do not believe that it will always be possible for the supplier to be responsible for the comms hub installation, particularly for certain multi-dwelling properties, low density rural properties and non-domestics.

We do highlight concern however that there needs to be the provision of a standardised HAN protocol in all communications hubs.

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

ESTA do not believe the timelines are realistic, for reasons given in the attached appendix Fig 1. ESTA have also made proposals to significantly improve the timeline and believe it is DECCs responsibility to provide the consumer with best value and to consider seriously all options put before them.

Question 47: Do you agree that SMETS 2 should only be designated when the Government has confidence that equipment to satisfy the new requirements is

available at scale? Should a further period of notice be applied to ensure suppliers can manage their transition from SMETS 1 to SMETS 2 meters?

ESTA believe that for the market to have a degree of certainty timescales and specifications should only be finalised when certainty on compatibility and availability are confirmed by the manufacturers / certification assurance providers. This does not require waiting until devices are available but could be ascertained prior, based on detailed interaction with the manufacturers. ESTA would caution however that the market could be saturated with SMETS1 meters before SMETS2 is available.

Such a scenario meets suppliers' obligations but will be of no value to a consumer without technical interoperability. The costs of providing commercial interoperability, when available must be transparent so that the customer is protected. Whilst we understand the industry will learn from the transition phase, ESTA question why SMETS1 is being permitted to such a large scale.

Governance arrangements for SMETS in the SEC**Question 48: What are your views on when responsibility for the SMETS modifications process should transfer from the Government to the SEC?**

It is ESTA's view that DECC should remain responsible for SMETS governance whilst DECC leads the Smart Meter Implementation Programme and until the SEC is clearly operating effectively.

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

The technical sub-committee should maintain a core expertise and full understanding of the technical requirements of SMETS and SEC and how and why the standards and approaches were developed. A standing committee is better placed to retain the corporate knowledge and also understand the commercial aspects that arise from modifications to the SMETS standard. ESTA will be responding in detail to the forthcoming consultation on SEC governance.

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

ESTA suggests that security, testing and certification, firmware management, wireless communications and industry data management from a Meter Operator should be covered. From a Meter Asset Provider's perspective meter financing, meter design and manufacture, consumer technology and interoperability should be covered.

In addition, PR of the programme needs to be overseen in order to generate the expected savings the programme needs to achieve.

Appendix 1.

Fig 1 - Acheiving an Interoperable Implementation

